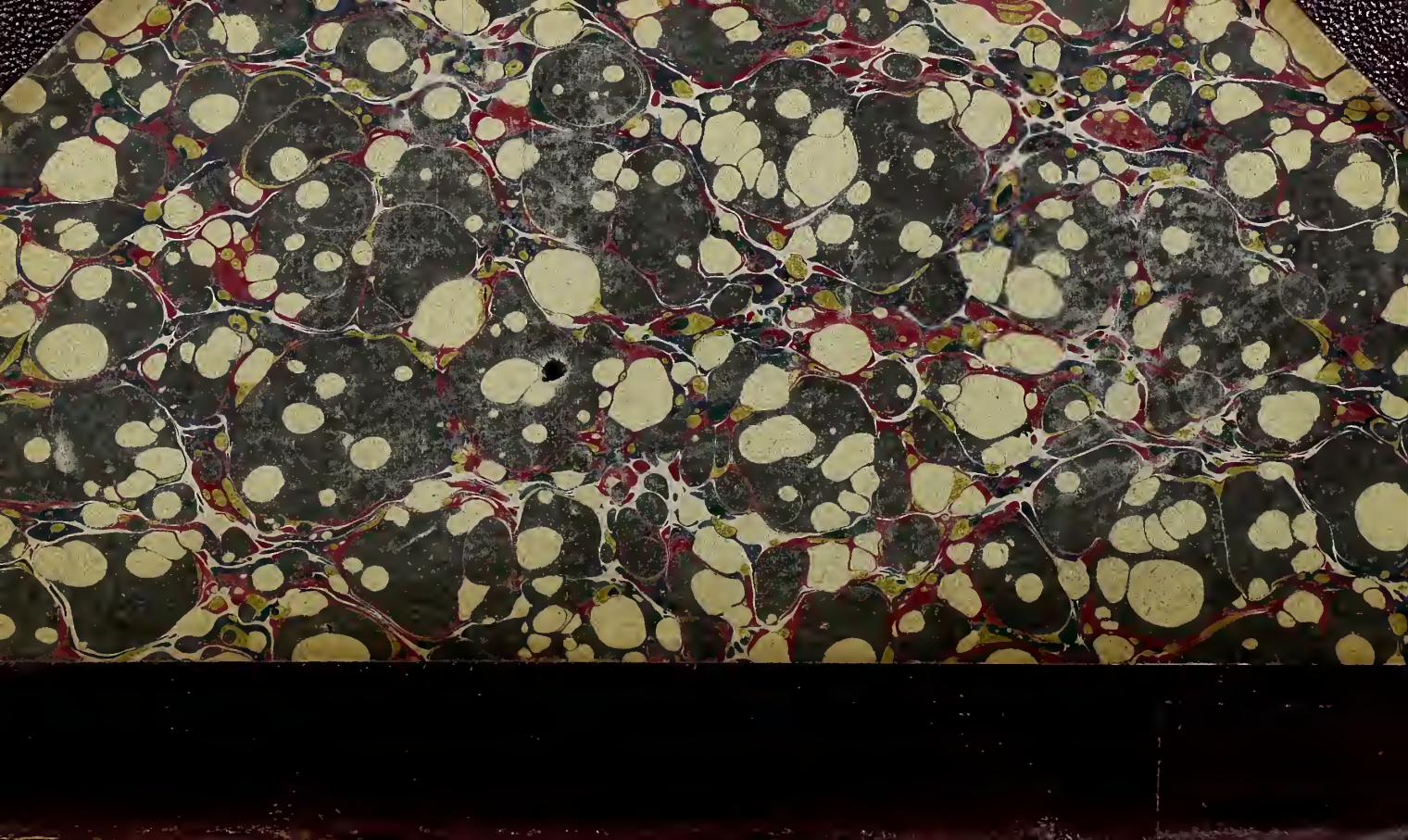


JOURNAL

OF THE

ASIATIC SOCIETY.

Report on the Island of Chedooba.—By Edward P. Halstead, Esq. *Commander of her Majesty's Sloop 'Childers.'*

[For much of the information under the head of History, Police, Revenue, Manners and Customs, I have been indebted to the kindness, and long residence in the country of Captain D. Williams, Senior Assistant Commissioner at Ramree.]

Division I.

General Appearance, History and Division.

The Island of Chedooba measures 15½ miles in length, viz. from 18° 40′ to 18° 55′ 30″ N. Latitude, and 17 miles in width, viz. from 93° 30′ to 93° 47′ E. Longitude, and shews on the map as a square the S. W. angle of which has been reduced. With its dependency of Flat Island on the South Coast, it covers an area of about 200 square miles. Its general appearance and character is that of a fertile well wooded Island of moderate height, and irregular outline. A band of level plain, but little raised above the sea, extends around its coasts, of far greater width on the East than on the West; within this lies, irregular, low, undulating

hills, varying in height from 50 to 500 feet, enclosing several higher detached mounds of steep well wooded sides, the loftiest of which, near the south part of the Island, rises nearly 1,400 feet.

The view from the top of these higher summits, presents, immediately below a scattered irregular mass of hills, confined principally to the western part of the Island, covered with jungle, interspersed with grass plains of more or less extent. To the Eastward a broad flat plain intersected with patches of jungle; and surrounding all, lie the cultivated rice fields with the different villages on their verge nearest the sea, the coast of which to the Westward is every where strewed with broken and detached masses of rock jutting far out.

The History of this Island is involved in all the obscurity which at present surrounds that of the neighbouring Continent. Under the name of Juaon it constituted in the time of the Mug Rajahs, one of four divisions of a province known collectively with the other three, Arracan, Ramree, and Sandoway by the name of 'Preegree.'

The head authority in each division was then called 'Jah,' and was nominated every three years, to prevent any attempt at independence of the supreme power by the Rajah of the Province, a matter not difficult in time of oppression, confusion, and general disorder.

On the conquest of the Province by the Burmese in 1784. its divisions were still retained, but their names, as well as that of the collective Province were all changed. The latter took the name of 'Lemroo,' instead of 'Preegree,' while the name of Chedooba itself was changed from Juaon to 'Mekawuddee,' and its revenue assigned to the support of the King's eldest sister, condemned to perpetual celibacy, as being unable to obtain a helpmate for her.

The alteration in the names of the Province and its divisions was acompanied by a change in those of the authorities. The provincial Governor was called 'Lemroowrain' or Governor of four countries, a title still given to our Commissioner, while 'Juoroowan' took the place of 'Jah,' as designating the head of each division, and is now applied by the inhabitants to the assistant commissioners.

The division of the Districts into Pergunnahs was also left undisturbed by the Burmese, and the head man of each, under the Mug Raj continued to be called 'Soogree.'

Of these Pergunnahs or circles with their Soogerees, Chedooba is divided into seven, viz: Kamman, Krae-rone, Inrooma, Ineubreng, Kyouktan, Tang-roa, and Ree-yueng, the latter its dependency of Flat Island, on its southern coast.

Of these circles, Kammaa and Tang-roa, which divide the whole western, southern, and part of the northern portions of the Islands, are the most extensive, but least populous, Kyouktan the smallest in extent. The other three the most productive and populous, and Ree-qyueng the best cultivated.

Division II.

Population—Revenue—Police.

The population of Chedooba may perhaps, comparatively with the neighbouring countries, be looked on as large, by the census of 1839-40 amounting to 8,534, and when it is considered that this population is confined to the strip of cultivated land surrounding the Island, at least that portion of the Island will be esteemed to have a fair share of inhabitants. No great increase from census to census is at present observed, but as I was informed that formerly the Island possessed a far denser population, evidence of which was afforded in the amount of land now waste, which had formerly been cultivated. I have no doubt that the effect of its present state of comfort and peace must soon develope itself in a large increase of inhabitants, who I was informed by one party were so numerous before the Burmese invasion that famine was sometimes the consequence of the inability of the Islands to support them, a statement I think not to be entirely depended on. As there is but little influx or efflux of strangers, the census from year to year, if correctly taken, presents the changes occurring among the actual Islanders. But from what I saw, and from a portion of the revenue being derived from a poll tax, I incline to think it is greater than the returns shew.

With exception of a very small community of Burmahs lately established on one of the eastern villages the whole population is Mug. Their account of themselves is that they are descendants of parties who originally used to cross to the Island from the mainland and Ramree to cut wood, and who eventually and slowly settled on it.

For sometime subsequent to the English possession of the country, considerable complication prevailed in the district, and partially in Chedooba owing to the mutual ignorance of the governors and governed.

The mistaken Revenue system introduced in 1827 and 1828, have been replaced by an equitable and judicious taxation: its present result is content, happiness,and peace, its future in all probability an increase in all these, in addition to opulence and prosperity. The revenue is raised from

the produce of the land, and from a light poll tax. There are no difficulties found in its collection, nor oppression resorted to; about 25 per cent. is absorbed by the payment of the collectors, the ordinary native authorities. The Soogree of each circle receives 20 per cent. on his collection, the Ruagon or head villager, 4 per cent., and the Ruacharee or Village clerk, assistant to the Ruagon, 1 per cent. These are also exempted from all taxes.

Besides the above, there are two or more officers in each village called Leedo-gongs, or heads of men, whose negative payment consists in exemption from taxation.

There is a native Police taken from among the people. Their duty consists in maintaining peace and quiet among the villagers, for which purpose some shady tree or bamboo clump is selected in the centre of each village, supplied with a bench and sort of small hut, where day and night, the Leedo-gong sleeps his watch. In fact in Chedooba his office is a sinecure, theft or plunder are not known, the men are too good humoured to quarrel, and I was told that the only call ever made on him, was one only occasionally to settle the few little amiable differences sometimes occurring among the ladies of his jurisdiction.

At the Town of Chedooba there is a small Sepoy Police, their business is to keep up communication with Ramree the provincial capital, and act as letter-men in the conveyance of orders, from the assistant commissioner there, to the different Soogrees.

I subjoin the official Statistics of Chedooba, for 1839-40 or Mug era 1202.—

Names of Circles.	*No. of villages in each.*	Population.				*Amount of Rev of 1839-40.*	*No. of Buffaloes in 1838-39.*	*No. of Cattle in 1838-39.*	*No. of doons of land under Cultivation.*
		Men.	*Women.*	*Boys.*	*Girls.*				
						Rs.			Doons.
Maoun,.	5	541	469	446	404	3,243	520	545	160
Moubreng, ...	7	531	461	417	377	4,033	675	208	226
Kreroo, ...	4	361	315	245	245	1,892	547	187	84
Kyoukiam,.	4	295	276	278	222	2,102	407	121	104
Requin, ...	2	124	120	106	110	1,219	659	. .	75
Joungroa, ...	3	418	353	317	285	2,347	794	13	115
Kama, ...	3	240	209	190	179	1,429	287	59	76
Total, . . .		2,510	2,203	1,999	1,822	16,269	3,889	1,133	844
Total of Souls,		8,535							

Division III.

Soil and Productions, cultivated and natural,—Waste Lands.

Soil and Produce of Cultivated Lands.—The general character of the soil of Cheedooba, is that of a light greyish coloured clay, mixed more or less with vegetable mould and on the low eastern parts of the Island, this admixture again modified with a large proportion of fine sand.

The cultivated lands do not generally extend quite to the present beach of the Island; between them and it there exists, throughout its circumference a slip of land varying from 3 or 4 miles on the eastern parts of the Island, to sometimes less than a furlong on the western, which abont 90 years since was upraised from the sea during our earthquakes.

This new land is not yet in general cultivation. On the east-north, and north-west it is so in part; on the west it is so thickly strewn over with stones as to make it probable it never will be. Throughout the circumference of the Island, the old beach line which is distinctly traceable, forms the interior limits of the upraised lands. On the eastern parts of the Island, where the soil is sandy, a difference between the older and newer is scarce traceable. But on the western and northern, the purer quality of the clay in the new lands distinctly marks off their soil from that of the older.

Throughout the soils of Chedooba is a large admixture of stones, with exception of those of the sandy plains eastward. They are generally small angular fragments of a soft greenish sand stone, and present no obstacle to cultivation, (except where large and numerous, as noticed above) the effects of exposure to climate evidently breaking them down into rapid composition with the soil

Large quantities of Coral and Juadreepore are distributed over all the upraised lands. The clayey nature of the soils makes them very tenacious of the rains, for which reason they are well adapted for the construction of tanks, either for irrigation or for the supply of the inhabitants. No water for the former purpose is at present required, for the latter, sufficient is found during the dry season, in the holes of the aullahs, and other natural reservoirs, and in the few springs which exist on the Island. The clay base of the Chedooba soils contributes much to endue them with a great permanence of productions.

They are not manured for cultivation though under yearly tillage, nor is a change of produce, as a relief to the soil, any part of the system of agriculture pursued, nor is the plan of exhausting the soil, and then allowing

it to be fallow for a season, in practice, year by year the same land yields its single crop in due season; the amount which is exacted from it, and to which it is fully equal. Lands in fallow are observable, sometimes extentively; but on enquiry the account always given of them was either that they had fallen out of cultivation from decrease of population, consequent on long continued political disturbance, or that they were lands cultivated for a season by settlers, who had after a time returned to the communities whence they had issued.

From natural causes connected with the character of the soil, and from a practice in use among the people, all the cultivated lands are strictly speaking subjected to an annual process if not of manuring, yet of an addition into the body of the soil of that which must greatly tend to the same effect. The heat of the dry season covers the face of the land with a tissue of deep cracks, in these the decay of leaves, grass, &c. during that season, makes a considerable deposit of vegetable matter.

It is also customary with the natives to burn their paddy stubble, and grass lands immediately previous to the monsoon, whose first rains before closing the fissures, wash into them the ashes thus formed—with regard to the grass lands they are burnt expressly with the view of improving the future crop, and the same benefit is doubtless effected to the rice land by the practice.

Its effect is particularly beneficial to the upraised plains, by assisting greatly the decomposition and dispersion of the calcareous matter upon their surface, and which must contribute largely to bring them into a cultivable state. To illustrate the gradual effect produced by the above means on these particular lands; it was stated to me by an eye witness that the upraised plain of the N. W. part of the Island was 15 years in acquiring its first clothing of grass, not only is it now covered deeply by that production, but many parts have for years yielded crops of rice, and all might do so. Jungle also is fast forming over it. Some parts of the low lands, both new and old, presented a sort of peat soil, still moist in the middle of the dry season, and affording luxuriant and green pasture. These grassy patches were most observable in the Krae-rone circle, which divides, on the north face of the Island, the more clayey soils of the west, from the more sandy ones of the east.

Rice is the staple produce of Chedooba. It is grown on all the level lands which form a land of more or less width around the Island, to which at present all cultivation with slight exception is limited. The yearly amount of this necessary produce varies, more through the fitfulness of temper of the people, than from any irregularity of the seasons. The

revenue claims must be defrayed with the proceeds of a portion, with another portion the family is to be sustained, the overplus purchases the necessaries of the family, and with no people is the list of these a smaller one.

From the more populous Eastern circles of Krae-rone, Inrooma, and Jueng-breng, a large quantity of rice is annually exported, partly in native vessels, which come for it from Akyab, and from the western parts of the Bay of Bengal, and partly in native boats, which come for it from Ramree, Sandoway, Gara, and sometimes from Bassein. The vessels from the westward, and the boats from the eastward generally purchase on their own account, the former bartering some few country goods. It is common for native merchants, or their agents to visit the Island from Akyab, or Chittagong at the season of gathering in the crop, and purchase it up from the different villages, giving a certain amount of earnest money, when it is subsequently collected at a convenient spot for shipment, and vessels sent to take it off. I was very anxiously enquired of by two parties, one from Akyab, the other from Ramree, thus engaged, as to the prices of the grain's market at Singapore, whither both were bound with their venture. A small barter traffic with rice is also carried on by the Islanders with their neighbours of Ramree mainly for fowls.

The western and less populous villages of the Island are also annually visited to see if they have grain to part with, a circumstance depending entirely on the above peculiar temperament of the people.

But independently of the superior advantage to the eastern inhabitants afforded them for a larger rice produce, in the greater extent of their plains, they enjoy also the great benefit of having those plains intersected by deep creeks, generally with a bar at the mouth requiring the assistance of the tide to pass over, but of considerable depth within, where country boats of the largest size, may in perfect security take in their cargo, in the manner pleasing to both parties, quite at leisure. For large vessels also, especially native ones, the anchorage in the straits is safer than that on the western coast, on which although there is anchorage every where, practicable and safe, in the fine season, for such purposes, yet the want of creeks wherein to keep them safe in the monsoon, at present prevents the inhabitants on this part from having any boats for shipment of cargo, which must therefore be taken off at the risk of the purchasers in their own. The rice of Chedooba is considered of very fine quality; a considerable quantity was purchased for the use of the crew of the 'Childers,' and the native

boats employed with her; the price given was 1 rupee for a basket and a half or 90 lbs., this was cleaned; grain paddy was at a much cheaper rate.

Both with regard to soil and produce, what has been hitherto stated of Chedooba stands also true, of Ree-queng or Flat Island, its dependency, and close to its southern shore.

The adaptation of the lands of Chedooda to the culture of rice, over those parts where it is now grown, is so clearly shewn by the quantity and quality produced, that it would seem hardly to warrant any expectation of benefit to be derived from change of produce to be made on them, and those of like character. To such a change also the preoccupation of the present lands in this produce, and the necessity (if practicable) of instructing the natives in the village of any new one in its place, present obstacles difficult to encounter, if not insurmountable.

In considering therefore for any general improvement in the agricultural value of the Island, as connected with the grain in question, regard can only be had to the extension of its culture where practicable, or to an improvement in the method of it, if necessary. On this latter point I am not competent to speak. On the subject of its extension I may say, that by observation made in passing through the country, from four to six times, the extent at present under tillage exists as waste land, applicable for rice. Limiting its cultivation to those flat plains where alone it can be extensively carried on, so that, assuming all rice land to be most profitably occupied in this production.

That the method of tillage does not admit of material improvement, and also, that of this grain no second crop can be produced in one year, and the above estimate would form the greatest probable increase of annual value derivable from this source. It might indeed be increased if a second crop of other produce could be procurable from the grounds, but even for their full occupation in the staple produce, European energy, intelligence and capital must supply the means.

Tobacco forms the next principal produce of Chedooba. In general its cultivation is confined to small gardens of about a rood each, in the immediate vicinity of the villages.

The gardens are all clearly kept, and a lighter mould with more vegetable matter in it, is preferred for their soil. The plants were much closer together than I have observed them to be cultivated in Syria, and the Levant, and I think must want light and air in ripening the leaf, as well perhaps as room for arriving at full size.

I found but one spot on the Island where its cultivation was at all extensive; this was in a small valley about a quarter mile in width, in the

interior of the Island, situated high, and near to the large volcano of Ineng-brew, though in the Inrooma circle. The soil was an alluvial one with a large proportion of clay. A stream ran through the valley. Here were from 8 to 10 acres of tobacco gardens, the plants with much more room given to them, and this spot I was told produced the finest on the Island.

The Tobacco of Chedooba is highly prized, and deservedly so. I procured a quantity of it to be made up into cigars for my own use, and was both surprized and gratified to find among these, several of as high and delicate flavour as any from the Havannah which I had ever tasted, and for the best of which, but for the manufacture, they might have been mistaken by any one, not knowing whence they came. The Tobacco of which they were made was grown in the neighbourhood of the South Hill, and on examining those which gave such satisfaction, they appeared to be made from leaves larger and riper than most.

The native, though never without a cigar from the time even before he can speak, does not smoke pure tobacco ; the stems and roots of the plant are cut up into shreds, and with a small proportion of the leaf, enrolled with the leaves of a plant supplied from the jungle, in a wrapper of Tobacco. He cannot therefore be considered a judge of the quality of his own produce, by those who use the purer article. The leaf when gathered, is dried in the sun, and when dry, strung through the stem upon slight skewers of bamboo near two feet in length ; these again are woven together with one or two strips of the same material into bundles of between 2 and 3lbs. which sell for our rupee each. This is the preparation of the larger leaves, and is for sale, the refuse supplies the family stock.

The whole of this produce which, from what has been said, will not be concluded to be extensive, is disposed of from time to time along the neighbouring coast, and the Island of Ramree, some of course finding its way further, but at present with exception of the larger cultivation mentioned, it is grown in sufficient quantity only by each family, to be kept instead of ready money, wherewith to supply the different wants or wishes of its owners, its quantity and estimation always making it an article of ready sale or barter.

Tobacco was always found growing on ground perfectly flat. It may be that the heavy rains of the monsoon oblige this, in order to prevent the plant, if on a slope, from being washed away, though this was never assigned as a reason, but simply convenience. Should the above supposition have weight, it would of course tend to limit the cultivation of a plant which necessarily standing very open, is therefore much exposed to such peril.

Still there exists throughout every part of the Island, waste lands whose soil would be found applicable to the cultivation of tobacco to a very large extent, even if subject to such limitation, and I am strongly impressed with the opinion that such cultivation would prove one of, if not the most valuable to which the unoccupied lands (not being rise grounds) could be applied. The present extent in which this plant is grown over all parts of the Island, I incline to look on in the light of a experiment only, but one truly valuable, at once for its extent, and its success, and therefore affording data under prudent precaution of similarity of soil, &c., on which to found expectation of great profit to be derived from its extension, in which case the present experience of the inhabitants in its culture, even when necessarily modified with view to improvement, would be found a valuable co-operation. It may be that my own estimate of the flavour of the tobacco I have spoken of above, has been erroneous, but even if so, the general mildness of all Chedooba tobacco, when improved by greater attention to its culture and preparation, would give it an extensive preference over the strong Manilla; whereas should it be found practicable to grow extensively a leaf of the flavour and quantity which I think to have found in the above specimens, Chedooba would become a formidable rival to the Spanish settlement.

The employment to be given by the manufacture of the leaf, if extensively grown and saleable, would add another source of benefit to be derived from such a step.

Cotton—Is grown in several parts of Chedooba; generally spots in the jungle are selected and cleared for its cultivation, which is however very limited, not affording employment by its manufacture for the women throughout the year. The surplus required to keep the looms (of which almost every family possesses at least one) at work, being imported from the main land.

Excepting a few plants in the gardens of the villages, I found no cotton in growth, though land were being cleared for it in several parts, and some of them extensive. Those few plants appeared to thrive well, but from the shortness of the staple of that which I found in use, whether of the Island produce, or the Mainland, I conclude that what is at present grown is as inferior in quality as limited in amount. It was however very clean and white, the articles manufactured from it, a few coarse cloths for the person. The soils on which the best Cottons of India are grown, I have understood to consists generally of a rich deep mould; if such be the case, and necessarily so, for the perfection of this plant, I fear that Chedooba holds out no prospect of benefit from any

extensive culture of it. That soils exist in the Island, where it may be grown with advantage to greater extent, and of better quality than at present, I doubt not, but I think that the advantage to the Island would be limited to the production of a supply of it sufficient to give fuller employment to the native looms, as at present wrought for domestic purposes, without recourse to importation.

In the gardens of every village Sugar Cane in small patches is to be found; it is mostly of a red kind, small, and woody in stem, with short joints. In the Eastern parts of the Island it is grown to extent sufficient for the production of a few maunds of jaghery; but in the Western parts, where it is of more recent introduction, a sweetmeat for children is the highest object of its growth.

As with the Cotton, and for the same reason, I incline to the opinion that Chedooba does not hold out the prospect of any extensive growth of the Sugar Cane.

The only place where I have seen this valuable produce flourishing in this part of the world has been in the Amherst Province of Tenasserim, where it was luxuriating in a soil very different from any which were found, or are I think to be found, in Chedooba, a dark rich vegetable mould. In the neighbouring Island of Ramree it thrives well, and it is fair also to state that not only is the Chedooba plant one of very inferior quality, but that not the slightest trouble in the way of cultivation is taken with it; portions of the cane being merely put into the ground in the month of May, and left to nature to bring to perfection. That therefore as with the cotton it might be both improved in quality and increased in quantity, admits of reasonable expectation. But there seem to be insurmountable obstacles to Chedooba ever becoming of importance as a Sugar Island, arising from the unsuitableness of the soil in general, and, (under the supposition of the occupation of all rice grounds in the cultivation of that staple,) the too limited extent of surface for such purpose, clear of steep hill sides, which would remain. In passing through the jungle, on one occasion a cleared spot of some 4 or 5 acres was found occupied half with hemp, and half with indigo.

This was a speculation of a native, and the unusual enterprize it discovered promised to bring its reward, as both crops appeared healthy and flourishing. The planting of Indigo is very limited, the plant of an inferior quality, and its preparation a very clumsy operation. It is not grown for export, but sold in the different villages to dye the produce of the native looms.

I could not learn that the Hemp was a more common production than the other; in fact it is grown in small quantity only on the Island, to whose inhabitants it supplies material for the few nets they possess. I had no means of judging of its quality, other than from the healthy appearance of the plant, which at least seemed suited to its soil, and therefore to afford prospect that this produce might with success be more extensively cultivated in portions of that district of the waste lands which lie between the available rice plains and the steeper hills. In conclusion of this notice of its agricultural produce, and in contemplation of plans for the future improvement of the Island in this regard. the general impression resulting from examinations of its soils, and consideration of the character of its inhabitants, was that such object would be effected in the best and readiest manner by increased care and attention given to extension and improvement of crops already grown on the Island, rather than by attempts to introduce on it extensively any new produce.

A good supply of cattle exists on the Island. The buffalo gives his strength for the more arduous agricultural labours. The lighter cattle draft the produce in hackeries with which the Eastern villages are well supplied. The breed is small, but strong, and supplies very sweet meat. Labour in connection with agriculture is however the only demand made on them by their masters.

Fruits are not very numerous on the Island, unless the multifarious produce of the jungle, familiar alone to a Mug appetite, is to be honored with the name. In the struggles of past times between the Mug and the Burmah, Cheedooba had its share, and from one of the measures adopted during those times in connection with this head, viz., the destruction of all its cocoa-nut trees, that they might afford no sustenance to an invader, it still suffers. Of this valuable fruit therefore there are comparatively few, mostly young trees, but they thrive luxuriantly, and a few years more if attention be paid to their increase, would see the Island supplied with them in quantity sufficient for more valuable purposes, than that for which alone it is now esteemed—the means of making complimentary presents.

The plaintain flourishes well; but is not much cultivated, and is generally an inferior sort, containing a large hard seed.

The pappa is common, and large in all the village gardens.

The tamarind flourishes in great luxuriance and grows to a large size. This tree almost universally supplies shelter and shade to the villages.

Its fruit is not much used by the natives. It is found growing indigenously on the second or old beach, but was observed nowhere else; with scarce an exception, this being also the situation of the villages.

The mangoe grows wild to a great size. I have measured some of more than 4 feet diameter—its fruit is very inferior, nor is it attempted to be improved.

Both the lime and the orange are found in many of the villages, and thrive well.

The orange is of that sort named elsewhere the sweet lime, and if extensively cultivated would form a very grateful addition to the luxuries supplied to the capital.

Vegetables as fruits, are also of small amount. But here again as with his orchard, the Mug looks to the jungle to make up the deficiency of his garden produce.

Yams are good and large, but plentiful only in the eastern parts.

Many species of pumpkins and gourds are grown in almost every garden; brinjals are very fine but not in plenty.

A small shalot is grown in the gardens generally, and some fine onions, which I was taking with me for my own use, were both so much admired and demanded for seed, that this improvement to the Kitchen Garden, will probably in due time become general.

Chillies of all sorts are in every day demand for the curry.

In introducing to notice the more natural productions of the Island, in the vegetable kingdom, it may be well as before first to speak of the soil in which they are found.

This is with little exception of one character, a loose friable earth of light yellow colour, having the general clay base much modified with decayed vegetable matter, the angular fragments of soft sand-stone having passed from a greenish into a dirty yellow colour, and being in a state of rapid decomposition.

The exceptions to this were found in a few spots to consist of a soil bearing more of the character of mould. The above soil extends throughout the interior parts of the Island, embracing all the hills higher and lower down to those flatter lands which have been noticed as applicable for the extension of rice cultivation, and constitutes that of the jungles, which are co-extensive with it.

These in their general character are open, consisting much of detached clumps of bamboo or of trees from 1 foot to 18 inches in diameter, well separated below, but in their branches having creepers thickly entwined. Throughout the lower jungles, open spaces, some deserving

the character of small plains, are of very frequent occurrence. On the higher hills, the trees are closest of growth and largest of size, but still clear of understuff. Throughout therefore, no serious obstacle is presented in the task of clearing the land for cultivation,—a Mug, with a good dáh felling the trees over half an acre a day, and a footman may penetrate without obstruction in any direction.

The tops of the highest hills were visited with ease, save from the steepness of ascent, parts being traversed, which the superstitious fear of the Mug would never have permitted his voluntary approach to.

Timber of great size, and some of valuable quality, is to be found, but it is confined to the very summits of the highest hills, and is therefore partly inaccessible, nor would its amount ever remunerate the labour of constructing roads for its transport. The soil in which these grow is of the same nature as that described above, but within a few hundred feet of the summits, all of which are very steep, it is piled up in the loosest possible manner. The stroke of an axe or dáh on an extensive hill top, would so shake it for a space of 150 yards around, as to make observation in the quicksilver of an artificial horizon impossible.

Precisely at the spot where this loose texture commences—commences the growth of the large timber, increasing in size thence to the summits, and from the trees not being deciduous (or at least not so at the same season) a most marked line of separation is thus traced out between these and the smaller leafless jungle below.

The wood oil tree was the most conspicuous in growth and size, of the larger trees of these summits.

One was felled on the west hill, which measured in diameter at the respective ends, of a 60 feet length, 4 feet 6 inches, and 3 feet 6 inches, and another is left standing as a mark, on the summit, which measures 21 feet 4 inches in girt at 6 feet from the ground. The wood of this tree will not, I fear, be found valuable as timber, but its produce, the wood oil, has yet to be better appreciated than at present. This substance is produced by cutting a hole into the body of the tree,* and kindling a fire in it; the flat floor as it were, of the hole, has a groove cut in it, which receives the oil as it crudes from the wound, and whence a split bamboo conducts it to the pots placed for its reception; the quantity thus yielded from a large tree is surprizingly great. In felling the above mentioned individual the oil ran in a stream from it, and it must have contained even tons. The strict propriety of designating it an oil may be doubted. It has always

* See Dr. Spry's Visit to Arracan, No. 110.—Ed.

seemed to me more like a varnish; it speedily forms a highly polished surface on wood work, and has a fine aromatic scent, not unlike that of cedar; mixed with reeds and dried, it makes a brilliant and fragrant torch. The colour of the wood is a dull pink.

In the course of clearing these summits for observations connected with the survey, many other trees were felled exhibiting characters apparently valuable as timber. Among the natives there were differences of opinion about their names, and waiving even this obstacle to any description of them, the remark already made of the difficulty opposed to their being brought down, renders such attempt unnecessary. The oil trees would be found most valuable as a source of supply for that material, and perhaps many of their neighbours also would be found more useful living than dead, by the produce they may be found to yield One of these, of large size, and with a bark similar to cork, was found to produce caoutchouc in great abundance. On cutting through the outer rough coat, a soft inner one, nearly an inch thick, is found closely attached to the more solid wood; on wounding this, the caoutchouc exudes freely, of a consistency and colour like thick milk. The tree was much avoided by the natives on account of the noxious quality of this milk, which if by accident entering the eye, on the tree being struck, so as to wound it, was said to produce certain blindness.

Another tree of very large leaf but moderate size, was also much avoided, and great care taken in felling it, to prevent its juice from touching the skin, which it was said to blister and poison. The adhesive quality of this substance was therefore more taken for granted than proved.

A plant, with the appearance of a cactus, but growing to the height and size of a tree, and known perhaps generally under the name of *Sisso* (not the timber tree of that name) yielded the caoutchouc in the greatest abundance. On severing a leaf, it ran forth in a small stream like milk. Many of the creepers also contained it in large qualities, and in one spot of the jungle of the Krae-rone Circle, I found the Caoutchouc tree of South America, affording prospect that as European intelligence and enterprize became more attracted towards the products of India, that continent may some day find its exclusive trade in this every day increasingly valuable article, formidably disputed. The wild cotton tree grows to a great size, and at the time seen was covered with a mass of its beautiful crimson flowers and flocks of birds. Its wool is sometimes used for stuffing pillows or beds.

The Gamboge tree was found of large size, and in considerable quantity, in clearing the jungle from the summit of the N. W. Peak; it was well

known to the natives; but no use is made of its beautiful gum, which covered the stems in considerable quantities. It lives in the higher jungles.

It is not doubtless the only tree in these wilds yielding a valuable gum, but want of acquaintance with botanical science prevented researches of that kind, which might have led to useful discovery. The safety and facility, and even enjoyment with which such researches may be carried on in the fine season, in the woods of Chedooba, seem however to point them out as a spot very eligible for the careful examination of an able botanist, unless indeed they be considered too limited in extent to exhibit a sample of the general character of the jungles of this coast.

A very brilliant crimson gum was found to flow in great quantity from a large creeper (Tallee-medzou-nowy) which is very common. If dried speedily in the sun, becoming very brittle, but retaining its color, it is of very astringent quality, and is used in some diseases as a medicine by the native quacks.

I may not fail to mention another creeper, whose properties are as valuable as interesting, and not the less so from its being found every where, both high and low. It is truly a traveller's friend, and the wandering Mug well appreciates is value. With his dáh he cuts off a junk and quenches his thirst with its contents, a pure, tasteless, cool water, of which it contains as much as its large numerous pores will hold, and which are immediately emptied by holding the piece perpendicular. A piece about 2 feet in length, and as thick as a small wrist, gave rather more than half a pint of water. In the rainy season it would have given double that quantity.

In travelling through the jungles, the liquid of this water creeper (Jabroon nony) is the constant beverage of the natives, when not otherwise supplied with that necessary, and its universal presence makes him very independent in his choice of road.

The rattan is every where found in the jungles, and performs all the ordinary duties of rope; it grows to a great size; two were taken from the West Hill measuring 114 feet in length, and $1\frac{1}{2}$ inch diameter.

Although Chedooba may not be looked to for supplying valuable timber to other parts, yet for its own consumption, and most, if not all domestic puposes, it possesses amply sufficient to meet any demand. For such purposes plank may easily be brought down from the hill, whence the whole tree must be immoveable. The lower jungles contain woods, perfectly adapted to such uses, and in those of the Eastern Plains was found the Thew-gaan growing plentifully, some of the trees between 2 and 3 feet in diameter, and which itself would supply material for almost all

purposes. The wood of this tree is hard and close grained, of a yellow colour and most durable. In the Southern Provinces of Tenasserim it grows to an immense size, and also in the Sandoway district; hereafter its qualities may be appreciated by other than the Natives, with whom its durability has given rise to the proverb that 'a Cemoe of Thew-gaan lasts 99 years.'

It has been thus seen that the soils of Chedooba to the very summit of the Hills, and even there more so, are both productive and easily wrought. That therefore in any future agricultural improvement of the Island, man's industry will lay claim to a very large portion of that extent, now entirely in a state of nature, there can be no doubt; and over the face of all the lower hills, crops of various produce take the place of the jungles, which now occupy them. Such cultivation, even though limited to the extension to the greatest amount practicable of those products which are now but so partially grown on the Island, would therefore leave but a narrow space to be provided for, below those steeper, almost precipitous hills, which must always be given over to nature whereon to maintain supplies of timber and fuel. What such a space might be most profitably occupied with, it is perhaps attempting to look too far into the probable future, to make it other than presumption to speculate on. Yet in considering the nature of the soil, and comparing it with that of the spice gardens of Penang and Singapore, it has seemed at times likely that a similar produce might be found practicable here. For taking into consideration the very great disparity in the mode of the distribution of moisture between the two localities, still the pepper vine flourished at Sandoway, and at Mergiu, if not Moulmein; places all subjected to the same peculiarities of season. The growth of the Nutmeg, Cloves, and Coffee, are not yet despaired of.

Of the productions of the animal kingdom, the Island exhibits but a limited variety—under the head of agricultural produce it has been already mentioned, that large cattle thrive, and are plentiful and might be no doubt much improved—not only at present are they not killed for food, but even their milk is not used, and authority was obliged to be exerted in order to procure this luxury in the midst of herds.

The use to which they are applied has in the same place been already noticed, and beside them there are none.

One pony lives on the Island, the property of the Soogrees, and two goats are claimed, as belonging to the party of police, which is stationed at the chief village of Chedooba.

Of wild animals, the deer is the largest and most plentiful; they are very numerous throughout the Island, though I never either heard or saw but one species, that which is generally known as the 'barking deer.' The natives run them down with dogs; they have no means of shooting them. The flesh was found less dry and unflavored than was expected.

Next in size and number to the deer, is the wild hog, the only species on the Island. They are not large, but numerous, especially in the jungles which lie closest to the rice lands, on which they commit heavy depredations, and our assistance was frequently invoked to destroy at least some of the enemy. But in general the labour of the day was deemed enough for our party without trenching on the hours of rest, which was necessary in order to comply with the request.

Jungle cats are found but are not numerous, but one was ever seen by any of our party.

Squirrels are plentiful, and of large size, though of but one species; a dark brown in colour throughout, with exception of the throat, and a narrow stripe along the belly of yellowish white. One was shot of the size of a full grown rabbit; it was a male, his lady in company was of more delicate size.

Monkeys we heard of, but I much doubt their existence on the Island, at least it is strange that in so long and extensive a traverse of it, such an animal was neither seen nor heard.

The freedom from any formidable wild beast is a circumstance of advantage in these countries, which may not be passed over without remarks; it contributed largely to the comfort and freedom with which we were enabled to penetrate throughout the Chedooba, forming a source of congratulation when obliged to take up a night's lodging, or a day's journey in the jungle.

The Natives state that a tiger did once attempt a landing on the Island, but fortunately being seen while yet swimming towards the shore time was afforded to the inhabitants of the nearest village to prepare for his welcome, and before he could gain footing, either for attack or escape, he was cut in pieces with their dâhs, since which, his example has never been followed.

I know not how far the swimming qualities of a tiger may bear witness to the truth of this story, but the feat in an opposite direction was safely performed by one of the elephants which were placed at our service, which after breaking from his ropes, swam the straits, and landed safely on the opposite coast of Ramree, a distance of seven miles at the least, where he was recaptured and sent back.

Of reptiles, one snake was seen, and a few lizards and insects, the most numerous and beautiful are the butterflies, which were found even on the highest peaks. Bees are plentiful, but the jungles alone supply the honey, which is very sweet and good, and serves throughout the Island in the place of sugar.

Fish forms a very important part of the diet of the Mug, and mainly in this view, are the villages of Chedooba formed around the shores. It is very plentiful though not of any great variety. The most common is a species of bonetea, a muscular fish of rapid motion, and great strength, though seldom arriving at a weight of 4 lbs. It has a very thick smooth skin, without scale, and is of silvery white, longitudinally spotted with blue. On the western coast in the sandy bays, they are very numerous, and are taken in great plenty with hook and line.

The bamboo supplies the fishing rod, and in the evening, when most readily taken, the shore may be seen with 20 natives in a line from the nearest village, as close together as they can stand, up to their middles in the water, with their baskets slung on their backs, and casting their lines as rapidly as if fly fishing, laughing and joking at their success, without the least fear of driving their prey away, though they must be among their legs. The flesh of these fish is very firm and nutritious.

Very great quantities of a tiny little fish, most similar to, if not in fact, the Anchovy or a small Sardine, are taken on the same coast. They are dried in the sun without any preparation, a day or two's exposure being sufficient for the purpose, and exported in great quantities to Ramree and the neighbouring coast; each family also of the western villages where it is taken keeps a large supply, and demand is extensively made for them by the less fortunate communities eastward, so that they form a valuable adjunct to the resources of that portion of the inhabitants in whose neighbourhood they are common. The method of taking them is perhaps peculiar, and forms an interesting and lively scene. The morning is the time of the best 'take,' at which time, and when near high water, young and old assemble on the sand in groups, with flat open mouthed baskets of bamboo work, awaiting the opportunity for a catch. This occurs when the shoals of tiny fish are driven for supposed safety close into the beach by their larger, persecuting, and ravenous brethren. Then away dashes the nearest group of expectants into the water to the back of the surf, which is constantly, though not heavily rolling in on the coast, and driving back the original pursuers, face round in shore and place the flat mouths of their baskets in line together, just outside the

retiring wave, receiving from it, its finny contents. Sometimes more than a gallon will be thus deposited in a single basket.

The uncertainty as to where the shoal will come in, and the rapidity and ability with which the fortunate group take advantage of their opportunity, afford all the excitement and amusement to these cheerful people of a game of chance, and cannot be looked on by a stranger without interest. Flocks of cranes, crows, kites, and gulls of many sizes, colours, and voices, looking out for the stragglers on the sand, who have escaped the mouths of the fishes and the baskets, form an addition to the scene.

The grey mullet of good size and flavour is got from the creeks of the east side of the Island. Rock fish are plentiful, but not easily taken; when intended to be preserved, they are split into quarters, kept together at either end, and then opened by strips of bamboo, and the whole hung up to dry in the sun. Skate were frequently seen, but none caught, they were often observed to make very high, though clumsy leaps, a feat not often I believe, practised by flat fish. A fish of considerable size from 12 to 20 lbs. weight apparently, and in form resembling the salmon, was frequently seen of an evening performing very astonishing leaps. They were always quite perpendicular, and therefore appeared as a gambol, more than an effort to take prey, and sometimes extended to a height of 30 feet.

Of shell fish we found craw fish and prawns, the latter of great size and very delicious; they are limited to the creeks of the east side of the Island, where also the one in the neighbourhood of the Meug-breng village, possesses truly fine oysters. They are large, but of a flavour as delicate as our own Colchester luxury. They were in high condition when we visited their neighbourhood, and it may be lamented that they are not more generally known, and attempts made to grow them elsewhere. They have been transported to Kyouk Phyoo, and do well there.

Turtle are common, and are taken by the natives on the sand islands and bays. They are of large size and of good species, but I can make no mention of their quality as food.

Many beautiful and valuable species of shells are to be found on the flats off the North Point of the Island, where however but little leisure or opportunity of dredging for them was afforded.

Fowls are plentiful on the Island, and supply the most solid food to which the natives are accustomed. The demand for them by our people raised the price latterly from 18 to 13 for the rupee. They are of good size, and good flavour.

Of wild birds, the Sarus is perhaps the largest on the Island, and is plentiful. They are common in other parts of India, and are, I believe,

good eating. There are a great many varieties of the Crane, some of very beautiful plumage and great size. These constitute the greatest portion of the feathered inhabitants, and would supply perhaps some new and valuable varieties if not species; Doves are very numerous; a small green Parrot is found, and some few green Pigeons were seen. But in general, other than have been mentioned, the birds are of those species most commonly met with in these climates. The jungles are however scantily peopled, though I may not omit to notice one which, with its sweet and soft note late in the evening, often gratified us, and was deemed not an unworthy brother songster of the Nightingale.

The Mineral Kingdom—Though bare of much value, exhibits specimens of some interest.

Nodules of Iron ore of rich quality, are, on search, to be found generally either embedded in the greenish sandstone, or having been detached from it.

In the former state they were found most numerous, on one of the reefs of the North West Point called the 'Saw reef,' and in the latter on the North beach. But in neither case in quantity sufficient to make them valuable for other objects than those connected with science.

Specimens of copper ore, and some few of silver, were found on careful search, lying on the barren surfaces of the different volcanoes. They are all of very small size, and their amount limited as those of iron, and like them give no indication of the existence of the ore to any greater extent. A piece as large as two eggs was recorded as the largest ever found.

Petroleum is found on the Island, and might be extensively produced.

Two wells sufficiently near each other to afford the conclusion of their possessing one common source, exist in the Krae-rone circle, yielding annually about 60 pots each. A third is found in the 'Mroomce' circle, but it has been destroyed by fire, and yields nothing, being the property at present of no one in particular, the soil around it, is, however, full of the oil. The fourth and most extensive is in the Fangroa circle, and yields near 200 pots in the year.

The method of collecting it is simple; the earth is turned up to a depth of two feet, and a bank of soil raised round a square of about 20 yards, thus disturbed, so as to form it during the rains into a shallow pond of about the above depth. The surface of this pond is in a constant state of ebullition from the escape of gas, with which comes up the Petroleum.

It collects on the surface in three different forms. A green fluid oil first spreads itself over the spot where the gas is bubbling up; as it extends, its edges exhibit a brown curdled substance resembling half congealed dripping, and amongst this, as it becomes thicker, is seen gathering in spots, a dark brown substance of the color and consistency of molasses. This latter is used to preserve wood, to saturate paper for umbrellas, and is sometimes burnt. But the fluid of green color, is that mostly used to supply lamps. The curdled substance is used with the dark in the coarser purposes to which it is applied. This is the least valuable, and sells at 5 pots for a rupee. The other two at 3 pots for 2 rupees.

A bamboo is used to skim the surface of the ponds, and bring the substance to the bank, it is scooped up with a cocoa-nut shell and put into the pot. It floats so lightly on the water that this process is quickly and effectually performed. The break of day is the time chosen for the operation as from the cooler temperature, it is then of harder consistence on the water, and easier and cleaner skimmed. In the heat of the day it becomes so fluid as to make it difficult to collect without a large proportion of the water.

In the months of March and April the pond gradually dries up, and the oil can then be no longer collected from out the soil. The pond is then dug, and the whole soil in it as much disturbed as possible; on this operation depends the quantity to be yielded during the next season, and the deeper it is dug, the larger will be the produce; while on the other hand, if it be neglected, which is most commonly the case, the quantity of oil to be collected will be very materially diminished. A sort of superstitious fear is attached to these ponds, and on no account would a native dip his foot in its water, though he will not hesitate to dig the soil when dry, nor to handle its produce, to which no sort of deleterious property is attached. The state of ebullition without apparent heat may occasion this feeling among them.

The ponds are surrounded by a rough hedge of stout sticks, to preserve them from the intrusion of buffaloe or deer. Insects were seen in them. I had no means of collecting any of the escaping gas, which I should otherwise have done, but no heat perceptible at the surface is employed for its extensive developement. The Thermometer where the greatest ebullition was going forward shewing but two degrees more than the atmosphere, viz. 74°.

No doubt this mineral produce, might with ease, and little expense, be increased to a very large amount, and the oil has yet perhaps to be

better known, and better appreciated than now, when its value will in all probability be much increased.

I know not whether it has ever been thoroughly analyzed, but the almost pungency of its scent seems to proclaim the presence of a large portion of Naphtha.

In composition it differs from the tar produced from the wells of Zante, or the pitch of the Lake of Trinidad, partaking in all probability the character of the oil, which is found in the wells of the Irrawaddy. The material from these is in considerable use in our Tenasserim Provinces, and its native country, as a preservative of wood from the attack of the white ant, which it effectually prevents, and it is in considerable demand in the construction and preservation of the wooden houses of those countries; affording reason to believe that this, its well known and well tried property, might, with benefit, be more extensively made use of in other places. In a dwelling house perhaps an objection against the painting of the beams with petroleum might be supposed to lie in its scent; though this may prove but a supposition, and at any rate it can form no objection to its use in stores and godowns, and other buildings of that nature, whether public or private. The expense annually incurred in Calcutta for repairs, called for, from the above cause of destruction, where it is necessary to examine, if not renew timber once in 3 years, seems at once to point out an extensive sphere for the application of this, its valuable property, in connection with which is also its employment in the preservation of spars for shipping.

The extension of the wells which are all situated in the jungles, and an increase of their depth so as to hold water throughout the year, are simple means by which this produce of Chedooba might be at once largely increased to meet such extended demand, at present I believe the use of the petroleum to be almost entirely confined to the limited application it finds among the natives. The only other mineral production it remains to notice is coal. This, or a lignite, was found about a mile within the western beach in the Circle of Tang-roa.

It had been known for 2 years, and had been dug into, to a depth of perhaps 5 feet without exhibiting any improvement over the surface specimens. It was found shewing itself for a distance of 20 yards in an east and west direction. Its situation, a little above the water mark of a dry creek, formed by the first and second lines of Hills, and its dip an angle of 45 into the body of the latter, which rose 800 or 1,000 feet above the spot where it was shewing. In formation it consisted of a series of layers varying from $\frac{1}{16}$ of an inch to 3 inches in thickness, se-

parated from one another by their laminœ of ferruginous sand. It was very brittle, with a dull fracture, and smouldered, but would not ignite. Neither from its situation nor its quality does it promise to become of any value.

Division 4.

Climate.—Chedooba, in common with the Arracan coast, has been generally considered as possessing a climate peculiarly fatal to Europeans, and the mortality of the Troops who occupied it during the Burmese War has given but too painful cause for the opinion.

Nevertheless I cannot but think that its insular situation, and its freedom from that extent of muddy creek, and Mangrove swamp, which peculiarly characterizes the coast of the mainland, together with the greater openness of its jungles, must be the occasion of some difference between them, and that in favour of the Island.

Its seasons are those of the adjoining countries, and may be divided into wet and dry; the rain commences its visit in the beginning of May, with variable winds and intermittent showers, which, increasing in frequency and duration, introduce the deluge which pours down incessantly from the middle of June to that of September, during which period 250 inches of water fall. Thence to the month of November is occupied with the gradual taking off of the rains, which from that month cease till the following May brings them round again.

In every country subject to such periodical rains there are two seasons when the sickness, which is the peculiar one of the climate, prevails, viz. at the commencement and taking off of these rains. Even in those countries which, but more partiality, are subject to a wet and dry season, as Italy, the Levant, and southern shores of the Mediterranean, the same effect is produced, and spring and autumn there, bring with them, their ever accompanying miasma fever. Under the effect therefore of a tropical climate, where the change at this time, in operation throughout the whole vegetable kingdom, is so much more extensive and violent, the effect of the greater developement of noxious vapour, must be necessarily looked for; and accordingly these periods are found to be the sickly seasons of Chedooba, and the coast around, and their regular return calls for great care and prudence on the part of the European, for whom, occupation of mind and body, as active and full as regard to unnecessary exposure will permit, may be strongly recommended then, as perhaps at all times, as a valuable addition to other precautions; as it has frequently been found that our sailors and soldiers, have suffered less from the

effects of climate when under the exposure, than when mind and body have alike been unoccupied and unenlivened.

Exposure to the direct heat of the sun of Chedooba, and its neighbourhood, is at all times of the year to be carefully avoided, and such imprudence will be the almost certain occasion of illness to an European, to whom the simple remedy of a chattah is always at hand; some peculiarity in the atmosphere appearing to make its rays more than commonly obnoxious at all times to his constitution; but this is more particularly the case in the months of March, April, and May, when the natives themselves are much concerned to avoid the intenseness of its heat. The mornings and evenings however, even at this time afford 4 or 5 hours, when all out door duties may be performed.

The above months constitute the hottest season of the year. The Thermometer in the day ranging at times to above 90°, but falling, from towards evening till before sunrise, down to a temperature, which is pleasantly cool throughout the night, a benefit enjoyed all the year round. On the main land, the nights at this season are frequently accompanied by a dense mist almost amounting to a rain, arising in all probability from the condensation of moisture, attracted from the large extent of water surface exposed by the numerous creeks.

Chedooba, with nights equally cool, and more healthy, is free from this peculiarity. But with the mainland, is, during the day, at this season, subject to a dry haze, at times to thick as so hide the view of the land; at a very few miles distant.

The heat at this time is greatly attempered by the fresh sea breeze constantly blowing, which gradually veering from south-west to north-west, with only a decrease of strength during the night, takes the place, at this latter point, and time, of the direct land breeze, which blows during the night in the cool season.

This cool season, the most enjoyable, and the healthiest time of the year, extends from the setting in of the north-east monsoon, towards the end of October, to the middle of March, during which time the climate is very delightful, the temperature seldom rising, excepting as the season closes to that of the summer heat of our own country. But the sun at midday is still very powerful, and direct exposure to it, to be avoided. This was the season during which I traversed the Island, and though constantly in the thickest jungles, sometimes by night as well as by day, I do not remember to have suffered a headache.

The sea breeze at this time sets in at 10 A.M, and falls with the sun, shortly after which a cool land breeze from the eastward takes its place, till

about 9 A.M., when an hour's calm is again succeeded by a breeze from the nort-west. The change of temperature was found very great during this season, between day and night, with the exercise of walking, the lightest clothing was found most suitable during the day, but about two hours before sun set the temperature falls rapidly, and at night with the land breeze blowing, two blankets and a counterpane were not too much to prevent actual cold. This change must always be carefully met, by dressing in woollen, a precaution which should never be omitted.

The same peculiarity of atmosphere, which produces such ill effects from exposure to the sun, may also be the occasion of a greater amount of exhaustion (not fatigue) under the exercise of walking, which I experienced more in going over this Island, than I had ever previously found, in the few other parts of India yet visited. A remedy for this feeling was always found by application to the contents of a haversack, and the precaution was always taken of not setting out on the day's journey without the regular meal. It is not altogether from personal experience in this particular, during so limited a time, that I would express the opinion, that bodily exercise of any sort in this climate, requires for its support, at least by the European constitution, a generous diet. In its corroboration, I was informed, that during the time of service, on this coast, of the 65th Regiment Native Infantry, a very fearful mortality took place among the Sepoys, not so much from the actual violence of the prevalent disease, the well known Arracan fever, as from the consequence of its debilitating nature, from which the constitution of the Native would not allow him to rally, though always assisted by liberality administering strengthening medicine and means; while to this mortality among the privates, a strong contrast was exhibited in the constant good health of all the officers, throughout the whole period of nearly two years, a contrast attributed by the medical, and other officers of the regiment to the difference of diet of the two parties. During the exposure to which the crew of the 'Childers' were necessarily subjected in the execution of a survey on the coast, many cases of the same fever occurred, at the present time amounting to upwards of 60 in number, but of the parties so suffering there were but few who were not perfectly recovered, and at duty again in 8 days, a circumstance which I incline to attribute mainly, not only to the usual liberal allowance supplied to Her Majesty's seamen, but also to the endeavours (fully appreciated) to supply the crew with as much, and as great changes of good food as were, under circumstances, procurable.

There must not be left out of view the great value of the facility of an immediate application, on first symptoms, to a medical adviser afforded in

a man-of-war. Nor again that of the precaution which the service provides under such circumstances, by the administering of wine and quinine to all likely to be exposed. This latter was found of great use, and is much to be recommended, while in regard to the other consideration it is right to notice, as tending to deprive this fever, of something of its formidable character, that in many cases, a simple dose of medecine, administered on first symptoms, has sufficed to drive it entirely away. One case only proved fatal, and with it were connected peculiar circumstances.

The climate during the period of the heavy rains is not an unhealthy one, it will be one necessarily of great confinement to the European, which is perhaps unfavourable, being inclined to attribute much value to personal exercise, but occupation by all who know its value, would not even at such time be found impracticable even for the body, much less for the mind.

The temperature during this season is cool, though the moisture of the atmosphere is very destructive to every thing but stone and metal. It is the time for the growth of the crops which we put into the ground just previous, and it is now that nature puts on her rich clothing of verdure; and vegetation is most rapid. It is accompanied by a constant breeze from the south-west. The natives enjoy this time as much as their Burmah brethren, and with their smallest children, like frogs, delight most in exposure to the heaviest falls.

Great importance as a preservative of health in this climate is to be attached to a very careful watch over the due performance of the digestive functions; both speaking from personal experience, and also by observation of our sick generally, it being found that inattention to this particular was not so much the occasion of dysenteric disease, as that it rendered the party liable to the prevailing fever, which was found to them a very intimate connexion with the state of the stomach, any derangement with the regular functions of which, if not a certain occasion, being at least a strong predisposing cause to taking the disease, and being found in all cases more than ordinarily its accompaniment.

My acquaintance with the climate of Chedooba is but small, and was limited to that of the best season of the year. I therefore would speak on the subject with every deference to the opinions of others of more practical knowledge, and extended experience. But as the result of what I have found and heard of it; I am strongly impressed with the opinion, that, employment for body and mind—to avoid direct exposure to the sun;—good (not intemperate) living; accommodation of clothing to

changes of temperature; careful attention to the state of the stomach; with due observation of these precautions, in aid of a sound constitution, the climate of Chedooba, would be found not only healthy, but at some seasons most delightful to the European.

The eastern parts do not enjoy so temperate a climate in the hot season as the western, being less exposed to the fresh sea breeze; and the immediate neighbourhood of the creeks would be found situations prudently avoided. The fine pulverulent soil in the east, by the quantity and penetrating nature of the dust it creates, is also at that season a very great annoyance; notwithstanding therefore the greater exposure during the monsoon, and that it is at present far less populous than the eastern. I consider the N. W. portion of the Island, as that which, at all seasons, would be found the most congenial to the European constitution.

While speaking of the climate of their Island, it is fair to notice its effect upon the natives themselves, as well as upon Europeans, and it was found that they also are subject, though but inconsiderably, to occasional attacks of the fever.

All the able-bodied men on the Island were employed with me on one occasion for a fortnight together, and therefore came under my direct notice, and though at hard work all day, and sleeping in the jungle at night, it came to my knowledge that fever had been taken by only one individual throughout that time, an old man verging on 80 years, and who ought not to have been present.

In traversing the Island throughout, I believe not to have omitted visiting any of its villages; and whatever sick were in them, always made application for relief, either personally, or by their friends. These cases amounted in all to four of fever, one of small-pox, one of dropsy, one of paralysis, one of blindness, and one of deformed limb, three cases of fever occurred also with our Bengallee attendants. The native population therefore seemed to exhibit no signs of a pestilential climate. While on the contrary, throughout the Island, they afforded the clearest and most extensive evidence of its healthiness, and suitableness to their constitutions, in the great number of old men and women, to be found in every village.

As mere old age entitles to the respect and deference of the whole community, the old people, as elders and leaders, always come forth to meet us; and with few exceptions even to the age of 106 years were found hale, if not vigorous in mind and body, much interesting information being gotten from parties 80 and 90 years old, with memories as fresh apparently, and minds as clear as they ever had been, men even of that age tak-

ing their share in almost hard work. Although this is a double testimony in its favor, it is as impossible, nevertheless to deny, as it is painful to acknowledge, that hitherto, these coasts have proved most fatal to Europeans, that sailors, soldiers, and civilians, have alike fallen victims to its fever, and on Chedooba an ample share; nor may there be a doubt thrown on the attention and ability of those medical officers whose exertions have yet hitherto failed in all attempts to stop its fatal progress. Whether therefore this country is one from which the European is to be ever thus excluded, or whether in the progress of all other improvements, and also if the character of his treatment by himself or by others may be found hereafter to enable him to make here also his temporary home, and introduce, with his wealth, his intelligence, his energy, and above all his religion, their attendant blessings, must apparently be left for the future to shew. But giving to the facts, which constitute this favorable evidence, no more than the weight, they are strictly entitled to—and others may be found perhaps to entertain with me, even more than the hope, that some such improvement may eventually render the climate of Chedooba, and also that of Arracan, no longer so fatal a bar as hitherto, to the advance in these provinces of the Civilization of Europe.

(To be continued.)

Memoranda on the 'Chulchulheera' of the Hills, and on some Lichens from the Himalayas in the Collection of the Asiatic Society.

By Henry Piddington, *Offg. Curator, Mus. Asiatic Society.*

My attention having been directed to this subject by our President, I took the opportunity, when examining the 'Chulchulheera,' to test also some lichens sent to the Asiatic Society from Simlah, in 1838, by Mrs. Siddons, which I found in the Museum. I have thought it worth while to make known the results of my work, and to add a few remarks which have occured to me, in the hope of drawing attention to this very interesting though neglected subject.

I subjected the 'Chulchulheera' to the common ammoniacal test, and found that it yielded a tolerably bright red brown liquid, though not the violet red described by Hellot; I did not succeed in producing any substantive dye with it, though using several mordants, I essayed to manufacture some kind of Cudbear from it also, but did not succeed. The preparation of Cudbear however depends upon *two*

fermenting processes, the first of which is the preparation of fermented urine, and then a sort of fermentation of the lichen with the prepared urine and lime. I am very doubtful whether, at the temperature usually prevailing here, we can obtain the fermented urine at all, in the state in which it is used in Europe, from its passing so rapidly to the incipient putrid state. It may moreover be doubted whether the heat is not also too great for the fermentation of the lichen. Hence, and because all fermentative processes depend so much on heat, and often on the quantity of material used, nothing can be predicted of this failure.

Lichens from the Himalaya.

These are, as above stated, a box sent down by Mrs. Siddons in 1838. I have arranged herewith a box of specimens of them, and one of bottles of the liquids produced. I subjoin a note of the colours as they appear when fresh, and I have marked their differences when seen by transmitted or by reflected light, for this appears worth noticing. To be seen properly they must be examined in a bright sunshine. I observe that some of the colours change a little, or become duller, in a few days.

Nos.	*By transmitted Light.*	*By reflected Light.*
1.	Crimson red.....	Lighted and duller.
2.	Rich bright Crimson.....	Deeper but very brilliant.
3.	Thin, poor, white-wine colour .	The same
4.	Deep maroon brown	A fine clove, or red brown.
5.	Dull red.....	The same.
6.	Very rich port-wine red..... ...	The same.
7.	Bright white-wine colour, but thin.....	Duller.
8.	Crimson brown	The same.
9.	Orange crimson	The same.
10.	Crimson	Crimson brown.
11.	Deep crimson.....	Brown.
12.	Deep crimson	Bright red.

13, 14, 15; much like No. 7, but I had but very small quantities to use for testing:—

16.	A poor dirty orange brown....	The same.
17.	A brilliant crimson.....	The same.
18.	A golden brown.....	Clove brown.

I should think, from the richness and intensity of the colours, that most of these, excepting perhaps, Nos. 3, 7, 5, 13, 14, 15 and 16 are worth attention; and it should not be forgotten that they have been certainly

three, and perhaps four years since they were collected. I proceed now to set down such remarks as occur to me.

There must be in all countries a season at which lichens and mosses, like all other vegetable productions, possess the largest quantities of colouring matter. At what time this occurs for Indian lichens, we at present know not: for those of the Himalayas' it is probably the autumn, and in other parts the driest seasons.

Judging from the under surfaces, some of these which I have tested are tree, and others rock-lichens; but there must be great numbers more of both kinds in those extensive regions. The rock lichens of cold countries are usually the best, as far as our knowledge yet goes.

We know nothing hitherto of the forest-mosses and lichens of the vast jungles of India, from Assam to Goandwana, and from the Terai of Nepaul to the Sunderbunds, the forests of the Southern Ghats, and those of Ceylon, Arracan, and Tenasserim! It is true that it is, as yet, supposed that the lichens of hot and humid climates are little productive of colouring matters; but I know not on what this notion is founded. There would seem to be as many probabilities the other way.

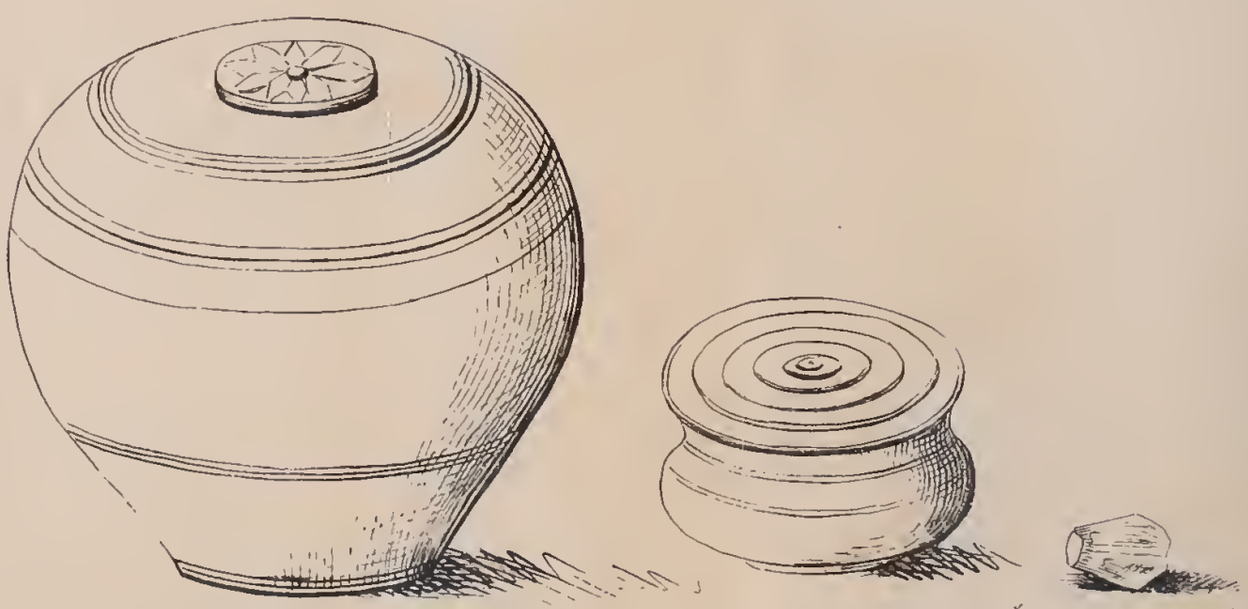
And when all the lichens, above alluded to, are examined, we have other vast fields and these of great promise. I mean the great volcanic plateau of Central India, from the basaltic rocks of Bundlecund to the Toombuddra; the points where, as at Vizagapatam and Cape Comorin, the granite meets the sea; those where, as in some parts of Malabar, the trap rocks from the coast; and the whole of the range of coast and islands, of every formation, which form the eastern shores of the Bay. We may in fact, from the infinitely varied condition of climate, rock, and soil, which I can only hint at here, except every possible variety of moss and lichen; and that many of these must be new and valuable.

Provided a lichen yields a strong and bright colour, we may always hope that it may be turned to account. It will be noted, that all these, which I have now examined, give colours which lie on the yellow side of the red, and not on the blue side of it, which would produce the violets. I mention this, because there seems a notion abroad, that only those which yield at once the violet-reds to the ammoniacal test are of any value. In the instructions for Capt. Beechey, on his voyage to the Straits of Magellan, this is indeed pretty nearly said in direct words. Now we know that, from Lapland to the Mediteranean, the rocks of Europe have been pretty nearly stripped of their lichens, by agents sent out from the great silk and cotton-printing establishments, for much of the work of which the rich Canary lichens are unsuitable, and far too dear. We *may*

hope to find some equal to, or indentical with these, but we may be well content with the goodly supply of the secondary sorts, with our great extent of territory must insure us when they are known. In no trade is there so much competition and so many secrets as in the dying and printing of silks and cottons; and I take it that none of the published notices give any distinct idea of any thing, as to the value and kinds of lichens, beyond what is already well known in the business: the secrets are far too valuable to be given away. The colouring principle moreover is not the only part of the lichens to be turned to account, gummy matter, extracted from them by Lord Dundonald's process, supplies the place of the costly gums in many printing processes.

There is an omission in all the printed notices which I have yet seen, which in many cases might mislead persons testing lichens. An important process—that of crushing or even pounding the moss or lichen to powder—is wholly omitted? A chemist would of course think of this; and Hellot, the inventor of the ammoniacal test, from whose writings all have subsequently copied, mentions it; but the usual directions lead people to suppose that the lichen is merely to be broken to pieces and infused, which may often be insufficient to develope the colour properly, and thus lead to a wrong conclusion.

The single lichen *Rocella* has been a mine of wealth to the Canaries and Cape de Verd islands. We have at least a fair chance that India may produce one, if not more, of these productions of a valuable kind, but nothing can be properly ascertained on the subject unless a considerable quantity—say a maund or two of each promising sort—be sent home. In the hands of European dyers and chemists, with their extensive resources, great experience, and ample leisure, it is quite possible that results may be obtained, which, our petty means, and want of experience and leisure, are quite unequal to develope. I have, for example. strong reason to believe that some of these lichens contain the 'Erythrine,' or violet-red principle of Heeren and Nees Von Esenbeck; but the research is one of those in speculative chemistry, which I have neither means nor time to undertake. I shall nevertheless be happy at all times to contribute my mite of aid, whenever it can be useful in the search for good dying lichens.



No 1. Height 3 0 In
Greatest exterior diameter 3 2 In
Thickness 0 1 In

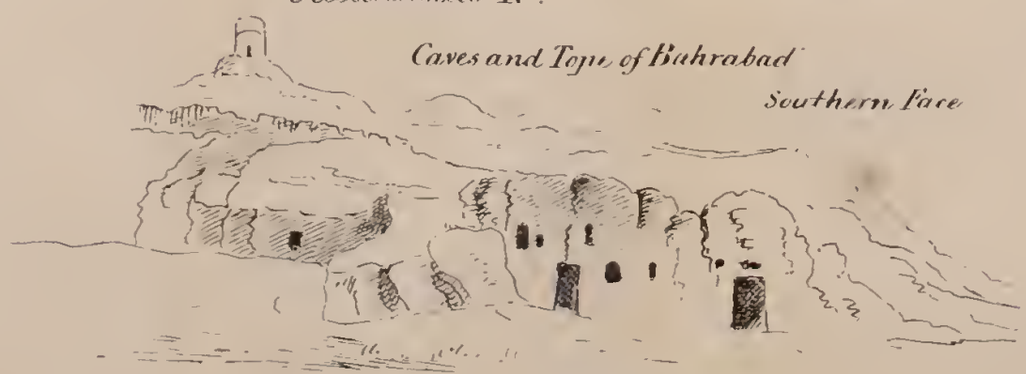
No 2. Height 0 9 In
Greatest exterior diameter 1.45
Thickness 0. 2.

Rock-Crystal Ornament, Found in Box N°3.

Caves of Bahrabad
West Face

Jullalabad R.

Caves and Topes of Bahrabad
Southern Face



Jullalabad R.

On the Topes of Darounta, and Caves of Bahrabad.—By the late Lieut. Pigou, *(Engineers.)*

At a distance of six miles from Jullalabad in an easterly direction is situated the village of Darounta, at the foot of the Koh-i-Surrukh on the right bank of the Jullalabad river ; scattered through the village, and in its environs are eleven topes, of various sizes, but all much smaller than the tope of Manikyala : on some of these are evidences of their having once borne external ornaments similar to those found on that tope ; they are built of stone and slate, cemented with mortar,and in some cases merely with mud ; all of them possess a chamber from 4 to 8 feet square, and some of them have in addition a shaft running down the centre; at the time of my visiting them, six of the largest had already been opened by Messrs. Masson and Honigberger; in opening the others, the method pursued was, to cut, as it were, a slice from the lip to the bottom, reaching to the centre by this means both the centrical shaft, and the chamber at the bottom were laid open ; out of the four thus opened, one was empty, the contents of the other three were as follows :

Box No. 1, was taken from the Tope-i-kutchera ; it was found in a chamber about six feet below the level of the ground ; it was contained in a rough case made of four slates (about a foot square) stuck together with clay ; these fell aside on being touched. Within the box were the three coins, and a peice of rock crystal ; the coins belong (2) to Ermæus III. (?) and one to Azos,

Box No. 2, was found in the Tope-i-fasl, it contained a small gold box, in which were placed several pearls, with holes drilled through the centre, and some small peices of what appeared to be bone ; the gold box with its contents has been stolen from me.

Box No. 3, was found in the Tope-i-Hosen-amanat, covered in a manner similar to Box No. 1, it contained a mixture of light red earth, and grey ashes, and three coins, all of Azos.

There can be little doubt but that these topes were built in memory of the illustrious dead ; without reasoning from analogy founded on the statements of a late traveller in the crimea, regarding the sepulchral tumuli discovered in the vicinity of the ancient Panticapeum, the metropolis of the famous Mithridates Entapor, the evidence furnished by the relics found in the topes, would irresistibly lead to such a conclusion ; with regard to the æra when these topes were constructed, it is more diffi-

cult to give a rational conjecture, but it is at least worthy of remark, that more of the coins formed in them, are of later date than the Bactrian kings.

Opposite to the village of Darounta, and overhanging the left bank of the Jullalabad river, are the caves of Bahrabad ;—these have been excavated on the plan of a town, but on a smaller scale, there is a charson or meeting of four roads ; that running to the north is the longest, and from it, five chambers open, these receive light from apertures immediately overhanging the river, which runs about 100 feet below them ; the passage running to the south leads to a Dallán or Hall, which also opens over the river, the passage to the west leads to the river, while that to the east is the general instance to the whole plan. The chambers are all lofty, airy, and well lighted, but the passages are very low and narrow. The cave mentioned by Honigberger as the Fil-khana, is a little to the east, and separated from the principal set of caves. The only ant iquity discovered in them, was a small slab of rough reddish marble, about 5 inches square ; on this slab was executed in demi-relievo, a pair of human feet, the toes, &c. being all distinctly marked ; round the feet, are four Lotuses, one at each angle of the slab executed in bas-relievo. It is said that similar slabs have been found in Ceylon, if so, a presumption may be drawn, that if the caves of Bahrabad do not owe their origin to the Buddhists, they were at least at one time inhabited by them.

R. P.

Note.—The objects given in the annexed plate were presented to the Asiatic Society, with the above memoir by the late Lt. Pigou of the Engineers, through our late V. P. Col. Macleod, in his letter to whom Lt. Pigou writes as follows of the gold box (unfortunately lost,) which was the most valuable in all respects of the remains discovered at Darounta.

'I have the pleasure herewith to forward two boxes, and some coins taken from the Jullalabad topes ; the three boxes, I had previously promised to Dr. Athinem to whom it is now made over, it was similar in shape to the box No. 1, but not quite so large. I regret that the small gold box, with its contents, has been stolen, as it was the greatest curiosity of all, but the precious metal excited the cupidity of my servants, who have made away with it. The marble slab is too heavy to send down by dák, and I have not got it with me ; indeed I am not sure that it has not been lost, but it is possible that it may have been left in my hut at Jullalabad. I also send you a rough sketch of the Bahrabad caves, which will give

an idea of the place, I am sorry I have not time to make a more elaborate drawing, but must forward it rough, just as it was sketched."

*The death of the writer of the above, by the premature explosion of a fuse, which he had with equal coolness, and gallantry laid to the gate of a fort in the Bajowur territory, during the recent employment there of Col. Shelton's brigade, has destroyed all hope of the recovery of even the slab. The presence on it, however, of the most unequivocal of Boodhist emblems, obviates all doubt as to the nature of the caves, were there not ample reason for coming to the same conclusion on other grounds. I alluded (As. Soc. Journ. No. 109, p. 97) to the Darounta and Bahrabad discoveries, with reference to those recently made at Kanari by Dr. Bird; the caves of Kanari we know, from the most authentic sources (Travels of the "Chinese Boodhist Priest Ea—Hian." A. D. 399. M. Remusat's Translation) to have been a favorite place of Boodhist pilgrimage; the Boodhist character of those at Bahrabad, is proved by the presence in them of emblem peculiar to *Boodh;* the topes at Kanari yield an inscribed plate which records the dedication of the place 'in honor of the most powerful, very wise, and superior *Bhagavana Sakya Muni*,' while 'copper urns, a ruby, a pearl, small pieces of gold, and a small gold box, a silver box, and some ashes' were also found there: at Bahrabad no inscription is discovered, but 'the copper coins, and the rock crystal' (types of the wealth of a poorer people) the 'small gold box in which were placed several pearls with holes drilled through the centre, and some small pieces of what appeared to be bone,' all go to prove that the races, which at points so far apart, have left these traces of their usages, and their religion were equally Boodhist, although the constructors of the Darounta tope would appear to be the ruder, and less wealthy of the two. They are able it is true to deposit gold, but more sparingly; ruby is replaced by common crystal; a stone vase, is used in place of the copper urn, and copper coins supply the bullion of the Kanari tope. The mausolea are evidently those of persons of inferior means, although in the character, and nature of the deposits, we trace an intimate connection with the more gorgeous relics of Manikyala. Mr. Piddington has obliged me, with the following notice of the Darounta vases, and their contents.

'Both the vases are turned out of a fine-grained potstone, and have the marks of the tool (particularly inside) as fresh upon them as if

* Three of my correspondents and contributors in Affghanistan, and among them, not the least valued, Captain E. Conolly, P. B., Lord and Lt. Pigou, were killed in action within the short space of 8 months.

made yesterday! The larger one has, beneath its foot, the oblong mortise by which it was secured on the lathe. Their dimensions are as follows:

	Height, Inches.	Greatest exterior diameter, Ins.	Thickness, about Ins.
No. 1, Large Vase.....	3·0	3·2	0·4
Small Vase.....	0·9	1·45	0 2

The state of the coins is curious: three of them, Nos. 4, 5, and 6 of the drawing, are completely encrusted with crystalised carbonate of copper, with a few detached scales of a whitish oxide, which may be owing to an arsenical or zinc alloy in the copper? or to carbonate of lime having penetrated to the coins? though this last seems nearly impossible; they are in very minute quantity, and it would not be worth while to disfigure the relics by picking any off for examination.

The remaining three coins Nos. 1, 2, 3, are marked as having been 'found in the box,' and they look so clean that we are inclined to suppose they have been really cleaned; especially, as the metal is much eaten and worn. No. 2, has still traces of the carbonate of copper on its face. No. 3, is the only one which we can suspect of having undergone the action of fire. but the boxes bear no trace of this, and I am inclined to think, that they have not been subjected to it. The rock-crystal ornament requires no particular remark',—beyond, I may add, the peculiar trouble, which has been taken in perforating it; it resembles exactly in size, form, and mode of perforation, the uncut emerald, now universally worn, by native chiefs and gentlemen of rank appended like a drop to the *surpéch*, or head jewel. The people who could have bestowed so much labour upon so common an object, must have been singularly ignorant of the more precious stones, and I might point to this slight index, as affording some proof that the deposit at Darounta, was made by the first leaders of a new race of conquerors, who subsequently left monuments of their rule, then a more polished, and a wealthier people, in the noble works at Manikyala. There too (As. Soc. Jour., vol. III. p. 563) we see, as on a smaller scale at Kanari, the practice of placing inscriptions in the tope obtained, showing perhaps the progress of science in conjunction with that of wealth.

An examination of the coins before us will lead to the ascertainment, with tolerable accuracy, of the date at which the Darounta Topes were constructed. The coins are, No. 1 of Azes: No. 2 is similar to No. 12 (As. Soc. Jour. Vol. III. Pl. XXXIII.) of those found in the Manikyalan

Tope by Mons. Court, in so far at least as the figure and attitude of Hercules is concerned; the head on the obverse of the coin is too indistinct to admit of very accurate identification, but I am convinced that the two are similar; Mr. James Prinsep remarked on the difference obtaining between this coin, and the rest of those found with it at Manikyala, and (As. Soc. Jour. Vol. VII. p. 646) he afterwards observes of this coin; 'on the reverse of the coins of the second Hermaios (or perhaps the third) having a Hercules for the reverse, commences another series of native names following what we have designated the Kadphises, or Kadaphes Group.' It is in fact a coin of Kadaphes, who invading, and subduing the country of the last Hermaios, adopted in part, according to the wont of the barbarians, the effigy of his coins, affording a strong contrast in its classicality, when placed, as at Manikyala, in juxta-position with the peculiar coinage of the Kadphesis and Kanerkis, by whom the types of Grecian domination were foregone. The presence at Darounta of this coin, (or coins, for No. 3 seems to be a duplicate though indistinct) with those of Azes, goes directly to support the truth of Professor Lassen's Chronological Deductions as respects that King, and his immediate predecessor. 'The coins of Azes,' he observes, 'are so closely connected with Greek types, that he must undoubtedly be a proximate successor of the Greek Kings, * * * * * *: he must be considered as a cotemporary of Hermaios.' (Lassen on Bactrian History, As. Soc. Jour. Vol. IX. p. 662.) But Mr. James Prinsep connects Kadaphes with Hermaios; when therefore we find their coins together, as in the instance now before us, the advent of the Saces under Kadaphes, to the destruction of the remains Græco-Bactrian power, and the succession of Azes shortly afterwards, (who founded the great empire of that people) may the more readily be admitted. Professor Lassen gives the following dates, about which we may assign the period of the construction of the Darounta Tope.

The Græcian Empire of Hermaios subdued by Kadaphes about	120 B. C.
Great Empire of the Saces, under Azes about.....	116 B. C.
Azilises succeeds him about...	90 B. C.

I need hardly add that to *Kadhpises* (a Parthian) Professor Lassen assigns a reign about 100. A. D. subsequent to the expulsion by Vikramaditya of Malwa of the Saces, from the countries along the Indus, A. D. 56, and a re-invasion of the land by new hordes of conquerors.

The coin No. 4 is so much disfigured by oxidation, that the artist, who, in the plate before us, tried for the first time the difficult task of delineating on paper the semi-defaced design of a coin utterly new to him, has

been a little misled. It is simply, like Nos. 5 and 6, the ordinary mounted horseman with outstretched arm to the left, and fillets depending from the head. The only coin in tolerable preservation is No. 1.

Report on Productions and Manufactures in the district of Hunumkoondah, in the dominion of H. H. the Nizam of Hyderabad. By A. M. Walker Esq. m. d., *Assistant Surgeon. Communicated from the Political Secretariat, Government of India.*

On the 12th instant, I had the honor of reporting my arrival at Hunumkoondah, since that time I have been employed in observing and noting the most important facts in reference to the object for which I am employed, and particularly in making inquiries respecting the production and manufactures in this part of the Nizam's dominions. As far as I could, I have trusted little to mere oral information, but have endeavoured to authenticate by actual observation, whatever appeared to me interesting or useful in nature or in art.

The face of the country in this neighbourhood presents a striking similarity to that in the vicinity of Hyderabad. Here are the same rounded, dark colored, herbless eminences, solitary, or in groups of considerable range, rising to the height of three or four hundred feet with the same ruinous appearance of the lower hills, and the fantastic piling of one boulder of rock on another.

The tank, with its mound of earth or masonry and the sheet of verdure which it nourishes and maintains, serve to complete the resemblance of general form and outline, nor does a more minute examination detect many decrepancies. The surface rock, throughout, is granite, usually of a greyish colour, but varying from a dingey white to a reddish and more rarely to a blackish hue, according to the colour and predominance of each of its constituent parts, quartz, felspar and hornblende. Where quartz is prevalent, the rock is close grained and compact, with little tendency to wear, while on the other hand the most superficial examination will shew that the excess of the two last, and more particularly of the felspar, is the certain cause of decay.

In one locality in the village of Nagwazum, five miles to the north of this, so abundant is the hornblende and felspar, to the exclusion of quartz in several specimens of the rocks, that they might be called sienitic

greenstone. I have nowhere seen mica take the place of the hornblende, hence the whole formation might be more properly termed sienitic than granite, particularly if the latter term is to be restricted to a determinate compound. Sienitic granite, however, a compromise between the two, would appear the better and most intelligible term for the rock as it exists here.

In a spur of hills running north south near the vilage, of Erapully ten miles to the west of Hunumkoondah, I remarked that the granite becomes stratified or in other words passes into gneiss.

At the foot of these hills the iron ore, afterwards to be described, is found.

I have not met with lime-stone yet, but from its being very commonly employed by the natives, I should supp se that it existed in considerable quantity. From their account it would appear to form nests in the granite; the soil is of four descriptions, first the Chilka, a red gritty soil little fitted, from the coarseness of its particles, for the purpose of agriculture.

2nd. Lalzumeen, a soil also of a reddish hue, and evidently the former in a more comminuted state; this is put beyond doubt by the ant hills formed on the Chilka soil being composed of this earth.

We thus see that these insects, usually looked on as troublesome and destructive pests, are not without their use in a grand natural operation. The peculiar acid, the formic, which is their chief agent, acts on the alkali and lime and most probably on the silica of the rockdebris, pulverizing it, and facilitating in all probability fresh combinations; the soil when manured is fitted for the reception of all kinds of crops without reference to season.

3rd. The Regur soil. As far as I have yet observed, this soil is of less frequent occurrence than the two last mentioned; as elsewere it is particularly adapted for cotton cultivation, and is generally esteemed the richest of soils. It requires little or no manure: yet the ryots are in the habit, previous to cropping, to let sheep loose upon it, it being supposed that their urine is very advantageous to its fertility: this is exceedingly probable as the salts which the urine contains, and the compounds they form, must be very efficacious in loosening the soil, and preventing the formation of clods, the common drawback of argillaceous soils.

4th. The Talao-ka-jumeen. The black soil found in the bottom of tanks. This is little esteemed, being a stiff clay, little permeable by moisture; it abounds in fresh water shells and at the beginning of the dry season, its surface is incrusted with carbonate of soda, of which mineral large quantities are collected for soap making. A property, common to all

these soils. is, that they effervesce with acids, thereby indicating the presence of carbonate of lime.

As far as our geological knowledge can lead us, the presumption is, that these soils in all their varieties are nothing more than the decomposed sienitic rock, and considering the number of simple bodies, of which this is composed, viz. Oxygen, Silica, Aluminium, Calcium, Potassium, Sodium Iron, and perhaps Manganese, and the ever varying proportions of its more immediate ingredients, we cannot wonder at, although we may fail to explain their striking diversity. Our notions of what may be termed the chemistry of nature are yet very vague and unsatisfactory, for an appeal to the crucible, electrophorus, and the whole machinery and reagents of the laboratory, has not always been successful in elucidating natural phenomena strictly chemical. Let us rest on the negative evidence of the impossibility of discovering, with our present lights, any other source for these soils than the rocks subjacent or in their vicinity, until strong proofs be afforded of their origin elsewhere. We cannot class among these the opinion, well nigh become an axiom with certain Indian naturalists, that the Regur, soil is always due to the disintegration of basalt; as for this purpose we must bring the Kishna or Godavery over heights and ravines, that existed periods of time anterior to a secondary trap rock being thrown up.

When the ground is left uncultivated, even for the short space of a year or two, it never fails to be covered with a low jungle, composed chiefly of the Cassia auriculata and Zizyphus microphylla, the former plant is hardy and luxuriant, and is in every respect the peculiar enemy of the cultivator, who certainly does not take the most effectual means to rid his fields of it, contenting himself with burning it or cutting it down to the level of the soil instead of rooting it up. Of the jungle trees by far the most common is the Butea frondosa, now in full blossom, which with the Bombax heptaphyllum, and the Erythrina Indica stand out as the most garish of the forest trees. The Garuga pinnata, Hyperanthera Moringa, Cassia fistula, Annona reticulata, Melia Azedirachta, Bauhinia parviflora, Capparis trifoliata, Ficus Indica, Ficus religiosa, Bombax gossipinum, a species with yellow flowers, Feronia Elephantum, with four or five species of Acacia make up the list of the more common jungle trees. The Borassus flabelliformis, (the Palengra tree) is every where seen, which with the Phonix sylvestris, also common, yields in great abundance the well known Toddy. Of the common jungle creepers two or three species of Asclepias, and Capparis, and the Combretum rotundifolium, are at this season, the most conspicuous.

The Mango and Tamarind trees are common about villages.

The grain chiefly cultivated is rice, of which no fewer than eight varieties are sown. Of these the *beetee wadroo* is the most cultivated, being both a rain and a dry weather crop, it is a middle sized grain with a husk of a light brown colour ; two of the other kinds are much smaller grains with white husks, the other five differ in size, colour of husks, &c.

Little of the rice raised is consumed by the inhabitants, but sent to Hydrabad forming the principal export ; in the districts its consumption is limited to the richer Mahomedans, Hindoo Zemindars, Brahmins, &c. ; the poorer classes chiefly derive their subsistence from the rain or *punass* crops.

The principal *punass* or khureef crops, are as follows :—of grains, Andropogon Sorghum (two varieties of jooarry, red and white ; the first only properly a punass crop, Andropogon Sacharatum), Bajree, Paspalum scrobiculatum ; Triticum wheat, a red sort sparingly cultivated ; Panicum Italicum, Italian millet; Cynosurus Corocanus (Raggy), and Zea-Mays. Of oil plants, Sesamum orientale, black and white, Ricinus communis, two kinds.

Of Legumes, Dolichos Lablab, Dolichos gladiatus, Dolichos fabæformis, Phaseolus mungo, Hibiscus cannabinus (Umbarah), a hemp plant, (leaves used by the natives as greens) and a variety of cotton called Salkapas. The rubbee crop consists of white jowarree, Cicer arietinum, Phaseolus mungo (a black variety), Crotolaria juncea (the sunn plant), and cotton, sugar, and paun. Piper betel is also cultivated to a limited extent, and also tobacco of an inferior quality. It is remarked that tobacco irrigated from a well of brackish water is superior in flavor to that irrigated from sweet water.

This can be easily understood, as a common means with fraudulent tobacconists of heightening the flavor of their tobacco is by dipping it in a saline solution. The garden produce consists of red pepper, brinjals, onions, garlic, carrots, radish, sweet potatoes, dill, coriander and bishop's-weed seeds, mustard seed for oil, fenugreek and some speices of amaranthus for greens, they use also the flowers of the aeschynomone grandiflora as a potherb.

Melons, cucumbers, and gourds, as in other parts of India, form a considerable article of diet, particularly in the dry season.

The village cattle are small, and at this season of the year far from well flavoured, but is said that a stout breed of bullocks is not to be met

with in the neighbourhood. Flocks of sheep, black and white, are every where seen.

The breed of horses, small, ill-shaped ponies, is very indifferent.

Wool meets a ready market in the districts being brought up for the carpet weaving of Warungal, and the manufacture of Kumlees; a small quantity is sent to Chandah in the Nagpore territory, its price at present is nine seers (the seer of 82 Halle Siccas) a rupee, white wool is 25 per cent. more valuable than black.

Hides were formerly exported, their price varies from twelve annas to (2) two rupees each. The ceasing of the export of hides within the last few years, is a favourable index of the extention of agriculture, as leather is employed in a certain quantity in almost every implement of farming.

The iron ore is found at the foot of a range of hills running N. and S. about ten miles to the west of Hunumkoonda.

It exists in the form of fragments, often of a rhomboidal shape imbedded in a red clay, and accompanied by pieces of gueiss and quartz. It is evident that the neighbouring hill is the source from whence it is derived, and I have little doubt that a skilful miner with some trouble (for the gueiss hill, unlike the granite, is clad with a pretty deep alluvion) might come upon the original bed of ore, of which these are mere detached portions; as it is, the demand for metal is sufficiently met by collecting and smelting these fragments. It is said that the Iron tract occupies a space of ten begahs, the greater part of which is covered by a woody jungle. The shafts are of various depths from 10 to 30 feet; into these the miner descends, and detaches by means of a small pickaxe whatever mineral he meets with from the red clay containing them, he determines by their weight whether they contain ore or not, and thus fills his basket. He can gather during the day six or eight small baskets full, one hundred and twenty of which are sold to the smelter for a rupee. The ore is reduced in the adjacent villages in the usual rude way so well known. It occupies six men for two days to turn out a maund (12 seers) of metal.

The Iron is brought up by Bunyas, for exportation, for R. 1½ a maund, and is sold to other customers for two or three annas more. The ore is of that kind usually called magnetic iron ore, and black iron ore being a compound of protoxide and peroxide of iron; it possesses the magnetic power but slightly. I have made a number of trials, and have found no specimen with magnetism enough to pick up a small needle. The circumstance too of the cutlers here having in their possession pieces of magnetic iron ore, as heir looms and talismans, sufficiently prove that this

virtue in a high degree must be rare indeed. The Sp. gr. ranges from 4-3 to 4-8, which would give nearly an average of 4,·5. From this I am inclined to think, that malgre the deficiency of attractive power, the ore is a tolerable rich one ; I may add that of all iron ores the black is the richest ; by possessing it Sweden is still able to surpass great Britain in the manufacture of the metal.

Besides the morinda citrifolia the wool dye, which is cultivated on the regur soil, the Oldenlandia umbellata (Cherwell or chay root) grows wild here in great plenty. A man and his wife can easily gather forty bundles in a day, which they sell to the dyer for 4 annas; it is employed to dye cotton of a red and orange colour. The Oldenlandia is cultivated on the Coromandel Coast. It is very probable that the dying properties of the wild, excel that of the cultivated, for dyes often follow the same law which renders the smell and taste of the wild plant, growing in a state of nature, stronger than those carefully attended.

The dying process is very tedious, occupying forty days and upwards. Five or six pieces of Indigofera are met with here, but one species only, the Indigofera cærulea, is used for the preparation of Indigo. It is collected in the rains when the dye is commonly made, the method of preparing which is sufficiently simple. A strong decoction is made of the plant, leaves, flowers, pods and twigs, being all indiscriminately thrust into a gurrah; when this is hot an infusion of Eugenia jambolana (rose apple tree) the indigo is immediately precipitated and the superincumbent water being drawn off, is dried in the sun.

The native plan of mounting the indigo vat merits attention : a potash ley is prepared from the ashes of the Euphorbia Tirucalli (milk bush hedge) and lime ley, mixing them together and then filtering. In this ley seeds of the Trigonella fanum-grecum and Cassia Tora are boiled, and the liquor being strained, is poured into the water drawn off, after the precipitation of the Indigo, and the Indigo itself is then put in and some more potash ley is added.

In three or four hours the fermentation is perfected, and the vat fitted for the purposes of the dyer. The theory of this vat is very obvious, extractive matter derived from the liquor in which the Indigo was first boiled, with the sugar, starch, and mucilage, of the two leguminous seeds, cause a fermentation by which the Indigo is rendered soluble in the alkaline solution.

The process is more simple than that usually followed by dyers in Europe, and is in perfect accordance with every rule of practical chemis-

try. There is no superfluity, and no waste; and on the whole it is a most favorable specimen of native ingenuity and skill.

Indigo from Masulipatam, the produce of Bengal, finds its way to this place, and is sold for the same price as the Indigo manufactured here.

The carpet manufacture for which Warungal or rather the villages, Muswarrah, &c., in its close vicinity are celebrated, does not appear to be an indigenous art.

A distinct tradition exists of its introduction, and also the method of preparing and drying the materials that compose it, being due to the Mahometans, facts countenanced, if not substantiated, by the present weavers and dyers being uniformly of that religious persuasion.

The carpet loom is nothing more than the common native loom placed vertically instead of horizontally. The waft is of thick strong cotton twist, being arranged by no wafting mill, but by one of the workmen going round and round two stakes fixed in the ground and dropping the thread at each, as he passes; in the loom it is kept on the stretch by two strong billets of wood, the threads being approached by separate loops of cotton fixed to a bamboo, which is elevated or depressed at the will of the weaver. The worsted is held in the left hand, and a crescent shaped knife in the right, the fingers of both being left free; the inner thread of the waft is then seized, the worsted wound round the outer, crossed on itself, and the extremity drawn out, by which it is made to descend in the form of an open figure of eight to be snipped by the curved knife. It is superfluous to say that this is the work of an instant; when the pattern is new or difficult, the order and position of the worsted threads is changed by a coryphoeus in a kind of rhyme. On a row being completed, the warp, in the shape of a cotton thread dyed dark brown by the bark of the Swietenia Febrifuga, is forced down by means of an iron toothed comb, in form something like an adze; the whole is completed by cutting the worsted to its proper length by a large scissors held steadily against the waft. It would rejoice a Manchester or Glasgow manufacturer to learn that infant labour is employed and preferred in Warungal carpet weaving, it being averred that their more limber finger joints are best fitted for the finer parts of the work, but cupidity all over the world is ingenious in finding excuses, and is ever ready to confound the expedient with the right. Dried springs of Toolsee (ocymum sanctum) and bunches of Lepidigathis Indica are attached to the loom frames; the workmen say that they make their labour go on more cleverly. Twelve different worsteds are employed.

The blue is produced from Indigo, the yellow, the sulphur yellow, from boiling the sulphur yellow in water impregnated with carbonate of soda, in which a little turmeric has been mixed, the deepest yellow is produced by dipping the same in potash ley. The reds are all produced by lac dye dissolved by tamarind juice, with sulphate of alumina and potash as a mordant. The depth of colour depends in 3 cases upon the original black, brown, or white colour of the wool; in the fourth on the length of time the last description of wool was allowed to remain in the dye. The greens are produced by immersion in Indigo, and then in polas or turmeric, their degrees also depend on the original colour of the wool. Bengal Indigo is always preferred to the home-manufactured by the worsted dyers, cotton carpeting is also prepared in the same way as the woollen.

The carpet weavers are described as given up to indolence and dissipation, to both of which they appeared on a late occasion most anxious to minister by endeavouring to establish a monopoly. There are at present two hundred looms working; at the village of Hoosun-purti, five miles from this, a good many looms are employed in weaving tusser or jungle silk. As this letter is already too long I shall defer till another occasion the description of this manufacture, and the rearing of the insects producing the raw material. I cannot conclude this without mentioning an import to this place, viz. English cotton yarn, of an orange colour, which comes from Masulipatam to be used by the cotton weavers in the borders of saries, punchees, &c.; the reason they assign for its employment is the quick fading of their native yellows; in all probability the English thread is dyed with fustic wood (Morus Tinctoria) the most lasting of yellow dyes. Be this as it may, its use bodes ought but good to the Indian manufacturer.

Roree in Khyrpoor; its Population and Manufactures.—By Captain G.E. Westmacott, *37th Regiment, Bengal N. I.*

Roree or more correctly Lohuree, the ancient Lohurkot, is a town of considerable antiquity, and said to have been founded with Bukur, about the middle of the 7th century of the Hejira. It is built on a steep limestone ridge that sweeps in a crescent form along the east bank of the Indus. The strata of the rock is horizontal, and exhibits marks everywhere of the the action of the river, which must have risen formerly at least fifty feet above its present level in the season of floods, and washed the foundation of the houses. In the sandy bays, creeks, and hollows aban-

doned by the stream, date and peepul trees grow luxuriantly, and rocks worn by the water, and shattered and broken into gigantic masses, were submerged at no very remote period. Along the base of the hills, on both banks of the river, the land bears the appearance of having been under water. The remains of a stone and brick wall, or quarry, built evidently to oppose the encroachments of the river, runs along the edge of the precipitous ridge which supports the town, and under it is an extensive cavern. Clay buttresses shore up the houses, which rise to four and five stories, and being composed of frail materials and badly built, threaten momentarily to topple over into the great road leading to the watering place, which is usually thronged with people.

The inhabitants affirm that the periodical rains have failed the last twenty years, and that the river rises less annually. An old Bunneah pointed to a spot, which he recollects to have seen covered by the river, and is now removed at least six feet above its level in the floods. To this cause partly, the people attribute the decline of the prosperity of Sind, and the extortions of the Talpoor Beloochees and the large expense incurred in digging canals and cuts for irrigation, swallow up the entire produce of their industry.

The Bunneah remembers upwards of fifty houses in Roree, being washed down about twenty years since by rain, and I can easily fancy the havoc a storm would make among the frail and ruined tenements in the town. The Indus rose, within his recollection, ten or twelve feet higher than it does now; for the last four years scarcely any rain has fallen, and grain has become progressively dearer, but there was a plentiful supply in 1839, compared with the quantity that fell in the preceding seasons.

The lime ridge behind Roree is without a blade of vegetation, it swells into peaks and eminences, and stretches several miles inland, and along the river, to the south. Some of the hills are isolated,—and intersected by little valleys, and some are capped by tombs, shrines, and other buildings in ruins. These parched and arid hills are in powerful contrast with the deep verdure of date groves and *bajree* fields that are scattered in rich luxuriance over the low grounds towards the capital of the principality. The *ledgah* of Roree is about five hundred feet above the river, and few spots in the Eastern world surpass the view from it in beauty, and present a greater variety of objects. In front of the spectator are two picturesque little islands; the one covered with date palms, the other with tombs and mausolea, shooting up into innumerable pointed spires of glazed porcelain. The fort of Bukur, beyond it, embraces a

vast oval rock in the midst of the Indus, and exhibits on this face twenty-three bastions of different forms resting on the edge of the stream; and date and peepul trees spring from the naked rock, and fix their roots in the foundation of the embattled curtain. On an elevated citadel in the middle of Bukur, floats the small blood-red flag of the Meer of Khyrpoor, emblazoned with the national emblem of a rampant tiger, and near it on a loftier staff, the more gorgeous standard of Britain, fourfold the size of the banner of the Meer; above and below the fort, are small wooded islands, inhabited by holy beggars, who are fed and attended by votaries from both sides of the water. The eye delights to rest on fertile groves of lofty date trees, mixed with vineyards and mango trees, and the Indus is seen meandering, far away in the distance, in snaky folds, through a perfectly flat and verdant country. The heights of Sukhur are a prominent feature in the landscape, and every hill crowned with a tent, a tomb, or a ruin. A battery of seven guns is in the midst of the British camp, and to the west of it the decayed mosque, the sainted shrine and minaret of Meer Masoom. The living objects in the foreground of the picture communicated to it, at the time of my visit, additional interest and animation; an encampment of several hundred camels occupied a small valley leading to the river, and their drivers had tents of black goat and camels hair raised on sticks. Belooch horsemen, with flowing beards, each in his national cap of coloured cotton and accoutred with sword, shield, and matchlocks, rode slowly among the hills, and asses heavily laden with grass and wood for the citizens, wound up the steep rocky ascent into the town. The monotonous song of the washerman filled the air as he beat garments of many colours upon planks, and troops of Hindoo and Moosulman women bathed at the different ghats, each of the former, on her way home, carried a vessel of river water to lave, with pious reverence the roots of a peepul tree, and the emblem of Muhadeva which stood beneath it.

Most of the houses in Roree rise to three and four floors, and some have five, and standing on elevated ground they assume an appearance of great vastness to the eye. They have no ventilators or towers on the roofs, to catch the wind like the houses in Lower Sind and Arabia; but the walls of the upper chambers are pierced with small windows without regard to symmetry. They are not glazed, but some of them in the harems of the principal residents, are filled with fine gratings of wood or mortar; some are open, and others furnished like the doors with folding shutters, which close badly, and are secured on the outside with a hasp and padlock; they are not painted any more than

the doors. The roofs are surrounded by a light rail or ballustrade, and have spouts to carry off water. The upper story has sometimes a wooden balcony, supported on frail posts, and the houses of the rich are contained in a walled court, along with buildings and sheds for servants. The rooms have pannelled ceilings tastefully carved, as are the window-frames and door posts. It forms the only ornament, and there is scarcely any furniture; coarse woollen carpets, and mats, supply the place of tables and chairs; some houses are constructed of burnt brick plastered with clay; when sun-dried bricks are used, they are not laid horizontally, but in a sloping or diagonal direction, (v. Fig. 1,) and the upper walls, which are extremely thin, are any kind of timber placed without regard to regularity, with tamarisk twigs between them, and plastered with clay, and chopped straw. Lime abounds every where; but it is not the custom in Roree nor other parts of Sind to white-wash the outer and inner walls of houses, and they have a dingy uncomfortable appearance. The upright posts are chiefly tamarisk, fixed into horizontal beams of the same, and set in a stone foundation to preserve them from the depredations of white ants. Roofs are flat, and built of slight timbers, covered with reeds, and when reeds are not procurable, mats are substituted. The frame work is acacia, date, a whitish coloured wood called *Bank* or *Buhan*, and any other kind of timber; the acacia is scarce at Roree and Sukhur, and the date never used for door posts and pillars. The people put on the rafters a layer of **teer*, then †*chupree*, and thirdly a kind of reed called *Gondree* (*Typha*), upon which they spread a coat of fat yellowish clay (*peela muttee*) mixed with chopped straw and the sweepings of houses. Those who can afford it mix wheat chaff with the clay, and when it is dry lay over it a compost of cowdung and clay, to fill up crevices. Dry cowdung is sometimes put on the reeds, and covered with chopped straw and clay; a roof thus formed is about a cubit thick; the wood and reeds occupy eight inches, cowdung the same, and clay two inches. The people assured me, that a roof properly constructed will endure half a century, and resist for twenty years the small quantity of rain which falls in Sind; a roof commonly stands ten years without requiring repairs, but the mats are soon rotted by wet. The cost of building a good shop, of burnt brick on the ground floor in Roree, is 400 or 500 Rs., and double the sum if a story be added to it; a large shop may be constructed of sun-dried

* The upper stem of moonj grass called in India Sirkee.
† The thick part of the stem of moonj grass called in India Surkunda.

brick for 300 Rs., and a small one for 50 or 100 Rs; most of the houses in Roree are calcined brick. To prevent insects penetrating the floors of warehouses, which are intended to receive grain and goods, they are sometimes paved with blocks of stone which may be procured in any quantity in the neighbourhood; the stones are covered with clay, and plastered with cowdung, and a thick coat of coarse salt strewed over it.

Houses above one story, belong to, and are occupied by one family, and when the children marry, they remove to another dwelling; all houses of this description, were built by wealthy merchants and bankers, before the reign of the Talpooras, and through their oppression many have been deserted by the proprietors Families occupy the lower floors in the cold months, and remove above in summer; they cook and light fires, above and below, and there are no chimnies for the smoke to escape. The great height of the houses, and narrow streets and lanes, exclude the sun's rays, and the heat in the lower stories is quite insupportable to an European in summer. A single narrow door gives admittance to a gloomy and dirty parlour, which is not furnished with windows nor any aperture for light and air; to get at the door you mount an earthen stair with a narrow terrace at top. Poor people rarely use bedsteads,* and have neither pillows nor sheets; they spread their mats at night on the house tops, or terrace in front of their doors, and cover themselves with a blue cotton cloth, which serves them for a garment in the day time. Others lock up their goods in a back chamber, and sleep in their shops, which are open towards the street.

The principal thoroughfare leading up from the Indus is paved with bricks laid edge ways, and some of the lanes and passages in the town, are as narrow and dirty as the closes in the old city of Edinburgh. The bazars are covered in with mats like those of Arabia and Egypt, to keep off the sun's rays, but so much neglected that they are a public nuisance, rather than a comfort, and a horseman cannot ride under them without coming in contact with sticks and cotton straw, which cover him with dust. The interior of houses, is extremely dirty; dunghills fill the open spaces and suburbs of the town, and it presents altogether a scene of great squalidness and filth: here are neither swine, vultures, nor storks to devour the offal as in Indian villages, but loathsome, mangy, and half-starved dogs are numerous, and almost the only scavengers.

---

* A common bedstead, laced with a string of moonj grass, costs eight or ten annas (12 or 16 pence).

Roree contains about forty mosques, where prayers are recited, and more than double the number ruined and deserted. The great mosque stands on an elevated platform in the N. E. quarter of the town, and was built, according to a Persian inscription on the front, in the year 992 of the Hejira, or 265 years ago, by Futteh Khan Lieutenant of the Emperor Akbur. It is a solid, heavy looking pile of red brick, covered by three domes, and faced with porcelain tiles, and on the east or front face, are a paved court and cloisters, where travellers formerly lodged, but now in ruin. When I entered the court, a traveller was just arrived from a long journey, and stretched at length upon his back on the pavement, while a monjawur, or attendant of the mosque, trampled upon his thighs to give relief, I was told, to his weary limbs.

Near the mosque, in the Hindoo quarter of the town, the *Mose Moobaruk*, a hair of Mahomed's beard is preserved in a shrine covered with ill painted arabesques. The Sindees say there are only $2\frac{1}{2}$ of these precious hairs to be found in the world; the one at Roree, one at Dilhee, and the remaining half in Persia; the relic, it is believed, was brought to Bukur four generations ago and is enshrined in amber, in a gold case set with rubies and emeralds. The gold case is kept in a golden box, shaped like the pen-holders used by Asiatics, and wrapped in silk, plain and worked, with gold and silver flowers, and again enclosed in a wooden box clamped with silver. The hair is exhibited to pilgrims, and said to change colour like a camelion before their admiring eyes; a number of *Moojawar* or custodians, are attached to the shrine, and four of the principal families receive among them a daily allowance from Government of $1\frac{3}{4}$ rupee.

Roree has two great bazars, one filled exclusively by grain-seller's stores, and the other with shops of cloth merchants, fruiterers, fishmongers, *et cetera;* people of a trade reside together, and Hindoos occupy quarters of the town distinct from Moosulmans. In the east quarter are the remains of a mosque and serai of noble proportions, which might be restored and made habitable at a moderate outlay, and would be a great benefit to the town, and convenience to travellers, who still lodge under the broken arcades which surround the ample court.

The town contains a number of shops, where turquoises are set and polished, it is a favourite gem but the specimens shown me were small, and of bad colour. People who cannot afford to purchase real stones wear false ones set in rings, and women adorn their toes with blue enamelled buckles or clasps, and their nose with a very unbecoming gold ornament, one half circular, and the other half moulded in form of a

crescent. Silver anklets are common, and females who are too poor to buy ivory bangles wear bone , poverty often prevents their appearing in gay coloured raiment, which is nearly confined to the public women, but they display their fondness for trinkets, by frequent visits to pedlar's shops, where mirrors, combs, leaden rings set with false stones, and other female ornaments, are sold. These shops are crowded with the wives and daughters of tradesmen, who pass much time turning over and trying on baubles, and I observed many sorrowful faces when they relinquished a favourite trinket from inability to pay for it.

In the fish market, a number of women congregate round people who sell *Singhara*, a fish like a shark considered to be very unwholesome eating, but preferred for its cheapness. The fish is cut in pieces, and the women go provided with small bowls to receive any quantity they require for their families.

Roree is divided into 46 Muhullas or quarters, and I add a list, and the description of inhabitants in each, which may be received, I think, as a close approximation to truth.

1.—Kanoongo,* Government Officers, Kardars, Moonshees, Putwarees, &c.

2.—Wutchoowaree, goldsmiths, &c.

3.—Suthdura, M. polishers and setters of stones, silk-weavers.

4.—Thushar (the name of a tribe of Moosulmans), M. cotton weavers, agriculturists, &c.

5.—Arain Khudwala, M. gardeners and fruiterers.

6.—Tukkur (a hill), H. Bahmuns, about 22 families of Hindoo shopkeepers.

7.—Musund, name of a tribe of Hindoo Gooroos.

8.—Arain (2d) Dulewala, name of a tribe of Moosulmans, M. farmers and agriculturists.

9.—Arain (3d) Ootradee, name of a tribe of Moosulmans, M. Farmers and agriculturists.

10.—Durgah, M. Moojawars, shopkeepers, cloth sellers, and labourers.

11.—Chyn Rae (name of a wealthy Hindoo living), H. shopkeepers and others.

12.—Chubootru, H. shopkeepers.

13.—Suynd Yakoob Khan Bazar, M. singers and musicians, H. shopkeepers, &c.

---

* H. denotes that the Muhulla is inhabited by Hindoos and M. by Moosulmans.

14.—Gujwanee name of a tribe of Moosulmans.

15.—Suyud Jan Shah (name of a Suyud living), inhabited exclusively by Suyuds; they are all Sheeas and permit no other class of people to reside in the Muhulla with them.

16.—Suyud Ghoun Sulee Shah (name of a Suyud living), inhabited exclusively by Suyuds.

17.—Suyud Ghoolam Shah (name of a Suyud living), inhabited exclusively by Suyuds.

18.—Moonda Kube (Moonda name of a deceased Fukeer), M. cotton-spinners, H. shopkeepers and labourers.

19.—Kazee Ghoolam Mahomed (name of a Kazee living), M. 15 houses of Hukeems (physicians).

20.—Moohur Kundee, M. stone and seal cutters.

21.—Kussab, M. butchers.

22.—Jiya Shah (name of a deceased Suyud), M. husbandmen.

23.—Kazee Purel (name of the chief Kazee of Roree), inhabited by his family and dependents. I may observe that the names of Muhullas which are derived from inhabitants of note are often changed on their decease to that of their successors.

24.—Bokharee Shah (name of a *peer* or holy man living), M. mat, fan, and basket makers.

25.—Mootrib, M. singers and musicians.

26.—Boola (name of a deceased Shuekh, a tailor), M. tailors.

27.—Kazee Wudha, inhabited by the family and dependents of Wudha Kazee and Hukeem.

28.—Satee, name of a tribe of fish-sellers, Soonee Moosulmans.

29.—Puba, name of a tribe of fishermen who float on the Indus on earthen vessels, Soonee Moosulmans.

30.—Tukurwala Puba, fishermen, Soonee, Moosulmans.

31.—Suyud Gholam Ulee Shah, (name of the Moorshid or spiritual guide of Meer Roostum of Khyrpoor,) all Suyuds.

32.—Bahmun, all Bahmuns.

33.—Buzzaz, H cloth sellers.

34.—Wudweerhye Kurmoollah, the name of a Shykh of the Wudweehya tribe, in the service of meer Nuseer Khan.

35.—Shykh Hydur Ulee, M. Moollas, husbandmen, &c.

36.—Churkh durwazee, M. tailors, H. labourers.

37.—Dhoora-wala, (from Dhoora a valley. The Muhulla being placed between two hills,) H. shopkeepers and labourers.

38.—Moondur, (name of a tribe of Moosulmans) milk-sellers.

39.—Ruseewut, Moosulmans who make string of *wan or moonj* grass to lace bedsteads, &c.

40.—Tuwelee, so called because it held formerly many stables. It was inhabited exclusively by Moguls, and devastated by the Tulpooras on their accession. It is now almost deserted being occupied only by about twenty families of Hindoos and Moosulman silk weavers.

41.—Khuchurpoor (name of a tribe of Moosulmans), H. M. coolies, labourers, and poor people.

42.—Mumnanee (name of a tribe of Moosulmans), M. dyers.

43.—Miyanee, inhabited by a tribe of Moosulman boatmen so called.

44.—Peer Bodla, M. shoemakers, leather cutters, and husbandmen.

45.—Mudtur, Moosulman soldiers of the Kuheeree tribe in the service of of Meer Roostum.

46.—Khanpoor, formerly inhabited by Pushans, and now deserted except by three or four Hindoo families.

I ascertained the number of houses to be 2,130, at $5\frac{1}{2}$ inhabitants to a house, which is I think a low average, this will give a population of 11,715 souls.

The shop-taxes *(mutkee)* of Roree, are called twice a year, and each trade nominates a *khulatree* or chief, and pays him a per centage on their profits, to gather the Government dues. The people assert that the Moghul emperors of India did not levy the tax, and that it was introduced by the Kathoras, but this is doubtful. All trades are conducted by Moosulmans; they are ironsmiths, carpenters, shoemakers, leather cutters, tinners, stone-cutters, tailors, dyers, weavers, fishermen, and fishmongers. The Hindoos work in gold and silver and are not prohibited following ing other trades, but it is considered a crime by their own people, and those who break the rules are accused of a tendency to Islamism. I took considerable pains to ascertain the amount of tax levied from different trades but am not sure that the following schedule is correct; the tax is subject to alteration, and some shopkeepers who are supported by chiefs and nobles are exempted from the cess.

Cloth merchants (Buzzaz), Rs. 6 per annum.

Cotton cleaners, Rs. 9 per annum.

Weavers of cotton cloth, (Koree)—cutters, polishers, and setters of turquoises and other stones (Weenjur); barbers and washermen, Rs. 2 per annum.

Venders of brass, copper, and pewter ware, carpenters, slipper makers, and leather cutters, Rs. 4 per annum.

Ironsmiths, each person, $3\frac{1}{4}$ per annum.

Bankers and money changers, Rs. 8 per annum (some of them are exempted from the cess.)

Goldsmiths and jewellers, 1½ Rs. per annum.

Dyers of silk and cotton stuffs (Khombatee), Rs. 5 per annum.

Cleaners and polishers of swords, matchlocks, &c, (Tewura,) Rs. 10 per annum.

Dealers in pedlery (muharee furosh), such as combs, pictures, rings, mirrors, beads, boxes, and glass bangles. Wholesale fishmongers, and steersmen of boats, Rs. 3 per annum.

One distiller (a Hindoo), Rs. 3 per annum.

Tailors and tinkers, ½ Rupee each person per annum.

Ox Butchers, (2 persons) each, 17 Rs. per annum.

Manufacturers of Indigo (2 persons), 18 Rs. per annum.

160 silk looms, 900 Rs per annum.

Fishermen, without reference to the form of their nets and mode of fishing, together 100 Rs. per annum. I have noticed the manner of levying the cess in the Journ. As. Soc., No.

Retail fishmongers, five fish per basket.

Wood cutters, together Rs. 100 per annum.

Goat butchers, together Rs. 95 per annum.

Roree contains seven families of tailors and four of ironsmiths, all of whom deserted their homes in 1839, for the British bazar at Sukhur to escape the shop tax, other tradesmen and artisans threatened to follow their example, and Meer Roostum was obliged to suspend the obnoxious tax, but continues to levy it in Khyrpoor.

There are no brass and copper smiths in the town, nor makers of blankets, canvass sacks and bags, and leather vessels for oil. The two last are made in Khyrpoor and Shikarpoor.

There is one tinner of copper vessels, and four polishers and cleaners of five arms, and a *Kular-khanu*, kept by a Hindoo of the Bhata caste, who distils liquor from dates both dry and fresh.

The number of water bearers (Panee bhurne-wala) amounts to ten families, and before the arrival of the British they sold *dillas* or earthen vessels, each containing about twenty seers of river water, in Roree, for a copper *pys*. Now they only give seven *dillas*, and earn about four *pys** a day.

---

* In 1839 the Sohrab rupee was equal to 51 copper pys or about two shillings English Currency.

The same individual works as carpenter and bricklayer; a clever fellow earns one *rupee* a day, and an indifferent workman four *anas* and his food, or two *anas* in lieu of food: the common hire is 4, 8, and 10 *anas* a day and food, but those who receive 12 *anas* and 1 *rupee* find their own. These wages equal what is paid in Savoy, where a carpenter or wheelwright has two francs or 1s. 8d. a day. There is no *Nirkh* or price current fixed by the state; every carpenter pay two *pys* of his daily earnings to the *khulatree* or head of his trade, who is chosen for superior ability. The Governor sometimes confirms the appointment, but it is not necessary to render it valid, and the *khulatree* is exempted from the shop tax which is levied on other carpenters; the tax is taken irregularly, and the amount uncertain. The rich and the young generally pay more than the poor and infirm, and the cess varies throughout the country under different Princes and Jalgeerdars.

A labouring carpenter with small business requires the following tools:—

	R.	A.	P.
An iron adge weighing $1\frac{3}{4}$ seer,..	3	0	0
A small hand-saw weighing $\frac{1}{8}$ of a seer (6 or 8 anas)	0	8	0
A chisel weighing $\frac{1}{2}$ a seer, ...	0	8	0
A gimlet or borer, turned as in India with a bow and leather thong,..... .	0	4	0
A small hammer weighing $\frac{1}{6}$ of a seer,.....	0	4	0
A plane,.....	0	2	0
A file weighing $\frac{1}{8}$ of a seer,.....	0	8	0
Rs.	5	2	0

A man, with extensive business, who keeps a shop, has four or five saws which cost together 5 or 6 rupees. A two handed saw weighing $\frac{3}{4}$ of a seer costs 2 rupees, and he has other tools in the like proportion but of bad iron, and not better made nor more expensive than the tools of the poorest carpenter.

Labourers, porters, coolies, grasscutters, *gare-walas*, who mix mud for building and plaster walls, earn 8 and 10 pys a day from the British, and 5 pys from shopkeepers and husbandmen, if employed at hard work, but the Governor and principal officers of Roree give 4 pys, and the prince 3 pys.

Sun dried bricks are formed in wooden moulds, and the makers earned in 1838, 4 anas a day and double the sum in 1839; two more are required for the process, and will prepare two thousand in a day at the cost of 1 rupee; in 1838, they sold double the quantity for the same sum.

There are very few builders in Roree, and in 1839, there was a great advance in the price of labour, consequent on the number of public works in progress, and the formation of a new cantonment at Sukhur, and private individuals were obliged to procure workmen from Shikarpoor.

The washermen of Roree and Sukhur call themselves *soomrae* and do not wash by contract; they charge so much per piece and more for fine garments than coarse ones. Their charges are :—

For a silk loongee, ...	4 or 5 Pys.
For a turban, and drawers of soosee, ...	2 „
For a bochun, loongee, and woman's mantle,.. ..	1½ „
For a shirt, sheet, and petticoat of coarse cotton,	1 „
For a boddice,.....	½ „

Rich and poor pay alike; children's clothes are charged the same as adults, and a double charge made for washing new clothes. The principal suyuds, merchants, and bankers, change their clothes four times a month, and sleep in their drawers, but put off their shirts and *bochuns*. Tradesmen, shopkeepers, and peasants, change their clothes twice, and sometimes only once a month; they consider dirt of no moment and wear their clothes till they are offensive, and Moosulmans and Hindoos are alike neglectful of their persons, and filthy in their habits.

After the washerman has collected the foul linen from different houses, he mixes a quantity of camel dung with water in a large and strong earthen pan, throws the clothes into it and rubs them forcibly against the dung; he then srinces them, carries them to a river, and dips them into a vessel of water mixed with *khar* (alkali) obtained from a wild plant called *lana* which yields impure carbonate of soda, and is burnt to obtain the alkali. He beats the clothes on a plank cut into sharp ribs until the dirt and dung are washed out, dipping them occasionally into the alkali and water; he then srinces the clothes, and steams them twenty-four hours over a large earthen vessel built into the wall of his house, to purify them and take out stains, and on the following morning carries them back to the river and washes them as before. He then takes them home, and squirts some water with his mouth on each cloth to moisten it, and folds four or five pieces one upon the other on a table, He next beats them with a stout wooden roller about twelve inches thick and eighteen inches long, which he uses with both hands, instead of a smoothing iron, to flatten them, and they are ready for use. Neither starch or indigo are used as in India; a few washermen have copper vessels but they are scarce.

Common soap is compounded of mustard oil with lime and *khar* (alkali), pulverized and imbued with water in the following proportions :—

Lime	48
Alkali	12
Oil	27
Water	12

Four seers of lime are mixed with one seer of alkali, and three quarters of a seer of oil ; the stuff is strained four or give times through coarse cotton rag into earthen vessels, one and a half seer of oil is added to lignify it, and it is exposed to the sun in an earthen vessel for two days, and stirred with a ladle until it combines ; the paste is not run into moulds, but set on stones in the shade to cool and harden, and is cut into small square cakes with a knife. Soap is not made in Roree, but there are four or five manufacturers in Khyrpoor, three of whom came from Bauwulpoor, and the rest from Mooltan, and I believe the Scindians are not acquainted with the art. The price of soap in Roree in 1839, was 4 seers the rupee, and 5 and $5\frac{1}{2}$ seers in the preceding year.

The process of tanning and curing leather is generally inferior to the mode adopted in India ; the leather workers of Larkhanu are however famous, and produce the best shoes, sword-belts, and water-skins in Sind. Good water-skins *(chhagul)* are made also at Shikarpoor and Kurachee, of bull's and buffaloe's hide, capable of holding about six quarts, and a traveller always provides himself with one, or a tanned goat's or sheep's skin, before he starts on a journey. The native soldiers of the Bengal army felt severely the want of water, when the army crossed the desert between Shikarpoor and Bolan Pass in March 1839, and feelings of caste would not allow many of them to drink from leather. The Bombay Sipahis furnished themselves with water bags, and suffered comparatively little annoyance from thirst.

The form is graceful, and it is usually about eighteen inches long and fourteen inches wide, and sewn neatly at the edges with thongs ; it keeps water very cool and costs about 2 rupees. The leather braces at the sides are to suspend the *chhagul* to a bush, or tent pole on a journey. (v. Fig. 2.)

A sack of sheep or goat's skin is used to carry water across the sandy deserts of Sind as the country does not possess the tanks, wells, and reserviors which pious men have constructed in India, in uninhabited spots, and are a blessing to the way-farer and his beast. When the traveller arrives on the bank of a river, he empties the skin, blows it up, and binds it on his belly and floats buoyantly over the liquid element. On touching

land he lets out the air from the sack, replenishes it with water and resumes his journey. He fixes the goat skin with loops to the upper part of his thighs and binds it lengthwise on his stomach with the legs of the beast uppermost, taking care that his head is exactly between them. It is a delicate task to preserve the balance. If the traveller shifts a little to either side the skin it turns him on his back and it would be a miracle if he escape drowning. He is instructed to make short and regular strokes with his hands and feet and preserve his presence of mind. Two native soldiers of the British army, attempted in my presence to swim the Indus at Sukhur on skins with their clothes tied upon their heads, and did not accomplish a dozen yards before they where thrown on their backs in the manner described, and but for the assistance of some Sindees, who swam with them in expectation of the accident, they would have been drowned.

The following is a description of the rude process of tanning and curing leather in Khyrpoor. After the skin of an animal has been well rubbed on both sides for a day, with a solution of lime to remove the hair and cellular fibre, it is left twenty-four hours, after which the lime is washed off and the hide soaked in water for the same period. When removed from the water it is rubbed over on both sides with thick gruel of wheat and rice flour for another day and night, and dried four hours. It is then well rubbed with *goor* (molasses) and linseed oil and rolled up very tight. It is suspended next day to a wooden triangle and stuffed full of the bark of acacia and **khyr* trees which contains the vegetable principle called *tannin*. Water is poured into it three days and the tan liquor that falls into a vessel placed underneath to receive it, is poured again and again into the hide which acquires a reddish brown hue in about the period mentioned. The hide being withdrawn from the infusion of bark, is drained and dried by turning it in the sun twenty-four hours. Some finely pounded salt is sprinkled upon it and it is well rubbed inside and out with linseed oil. It is then subjected to heavy pressure with stones for a day, and afterwards rubbed dry with cloths which concludes the tanning process. The hide of a Bull, Cow, or Buffaloe costs 14 annas (9 pence) tanning and curing, of which six annas are expended on the materials and eight annas on labour. The sale price is 2½ rupees (5 shillings.)

One of the principal confectioners of Roree gave me the following list

---

* Mimosa Chadira. The Catechu (terra Japonica) is obtained from this tree.

of articles in his shop, which were, he said, necessary to carry on the business, and estimated the value at sixty rupees.

4.—*Kurahee,* Flat iron vessels with handles in which sweetmeats are boiled or fried.

2.—*Khoorpu,* Iron instruments for scraping off sweetmeats from pans and dressers.

2.—*Chutee,* Iron ladles perforated like a colander through which sweetmeats are forced with the wrist to give them a shape.

2.—*Khooruchnes,* a large scoop or iron shovel with a spout.

2.—*Chumchu,* large circular iron ladles.

2.—*Jhara chumuch,* one large ladle, and one flat spoon, both of iron and perforated like a colander, for making *luddoo,* a species of round comfits.

10.—Brassplatters *(Shalee.)*

10.—Wooden platter *(Khooncha.)*

2.—*Julebee ke turve,* an iron oven with a hole in the middle for making the sweetmeat called Julebee.

2.—Large brass bowls *(Kutorah)* with bamboo ladles attached to them.

2.—Small brass bowls.

2.—*Doa,* Wooden spades for rubbing and mixing sweetmeats.

2.—*Belna* Rolling pins.

4.—Dressers or tables on which sweetmeats are laminated.

2.—Table cloths on which *Butasa,* a kind of sweetmeat of a light spongy texture, is made.

2.—Sackcloth bags on which sweetmeats are laid in the shop.

1.—Wooden stool.

1.—Pair large scales.

1.—Pair small ditto.

Suyuds Ghoolam Shah, Yakoob Khan, and Ulee Ukbur Shah are wealthy, possess landed property, and keep domestics who live in their house; and there are also three *Suhokar* (great merchants) in Roree, who keep servants to fetch wood and water and cook their victuals. They get 3 or 4 rupees a month, and food once a day from their employers' mess. None of the other merchants and tradesmen keep servants, and journeymen who work for their masters in the day time return to their own dwellings at night.

Madhoo Rae Chhutree, formerly Moonshee of the deceased Prince Meer Sohrab, resides in Roree. He received a stipend of 120 rupees a year and 8 khurwars of grains, but on the death of his patron, his son and successor, Meer Roostum, threw the Chhutree into prison and extorted from him the sum of 3,000 rupees under pretext that he was guilty of peculation

in office. The accusation was, I believe, partly true, but his enemies exaggerated his offence.

Hindoos do not hire barbers permanently, and give them a pys for each visit. Suyuds and wealthy Moosulmans have barbers on their establishments, who live, however, in the bazar, and practise their vocation elsewhere during their leisure hours. They yet 8 or 10 rupees and clothes every six months. The barber cooks the meat, rice, and sweetmeats for a marriage feast among Moosulmans, and receives for his services 4 rupees, a complete suit of caste off cloths including turban and slippers, and food during the period he is employed. He also shaves, washes, and decorates the bridegroom. He nets usually four or five rupees at a wedding, but it quite depends on the means of the family. The prince gives him 40 or 50 rupees. The barber carries the torch at Hindoo bridals *(burat)* which last from one to four days, according to the wealth and means of the bridegroom. For this service he gets a present of three rupees, and four pys from each family of the bridegroom's friends. He is an important member of a household, and Solyman, the prince's barber, is I believe, the only person allowed to serve him with water to drink.

There are eight families of *Mootrib* (Moosulmans singers and musicians,) who come from Sehwan, and attend marriages. The men are admitted to the bridegroom's apartments and their women to those of the bride. The men sing and beat the *dhol* and *nuggaru* (kettle drum). The women sing and beat the *dhol* only. The bridegroom and his friends give a few pys to each *Mootrib* on the days they attend.

The *Chokro* or cleaner of privies eats carrion, and his occupation is distinct from that of the *shekhree* or sweeper, who is more choice in his diet. Families give the *Chokro* from five to eight pys a month and food on the days he attends, which is not oftener than once a week at some houses, and morning and evening at others. He also frequently receives a cast off suit of clothes once a year. A respectable land owner of Sukhur of my acquaintance, gives the *Chokro* who attends at his house morning and evening, two rupees a month and food consisting of a seer of wheat or joowaree, and two pys instead of *bor*. Some people give grain at the end of a month (30 seers and 60 pys.) The *Chokro* employs his leisure hours in making screens or tatties of Surkund, a reed, and earns by both occupations about $2\frac{1}{2}$ annas or 4 pence a day.

Shekhree or sweepers, are not kept on an establishment as servants, but go round the city daily, and get from one to four pys for cleaning and sweeping a house, and earn thus from eight to fourteen pys a day. Shopkeepers usually sweep their own shops, and the part of the street im-

mediately opposite to them. The land owner mentioned above, gives the *Shekhree* who attends every morning to sweep his house, one rupee a month, and he earns altogether about four rupees a month. There are no sweepers or other public servants maintained at the charge of the city, but four or ten shopkeepers have a watchman between them to guard their property at night, and each pays him two annas (three pence) a month. The guard is not, I should suppose, very active, as he usually labours all day at another vocation.

Bankers and merchants live out of the Bazar in another quarter of the town and take with them sufficient money for their daily transactions, and lock up their shops at night, and carry away their money bags. There are two great *Suhokar* or merchants. Khooba, who has four *Gomushtus*, and Jeo. Both are inhabitants of Roree, and Hindoos of the *Bhata* caste from Marwar. Each is said to be worth two lacks of rupees.

The principal bankers (*shurraf*) are Tara, Koondun, and Tikyn also *Bhatas*. Tara is reputed to be worth two or three lacks of rupees, Koondun about two lacks, and Tikyn between three and four lacks of rupees. Tara has the most business and his credit and respectability stand high in the estimation of his countrymen and foreigners.

The Bunneahs of Roree deal in grain, tobacco, oil, groceries, spices, sugar, and fruit, and realise larger profits than any other class of tradesmen. Their daily receipts average from ten to twenty rupees and some in the British camp take as much as forty rupees. Grain and other articles brought from the country, are weighed before they are offered for sale by the *Mookhee* or chief of the trade, who is entitled to a seer in every *mun*.

The Bunneahs choose the *Mookhee* from their body by a majority of votes, and he is not precluded carrying on business on his own account in the usual way. They treat him with respect and submit all important questions for his decision. Instances have occurred of the townspeople ill-treating the *Mookhee*, and the Bunneahs closed their shops and refused to sell grain until the culprit was brought to trial and punished. He usually regulates the price current of grain, but the Bunneahs can alter it without his concurrence. He transacts a good deal of business for them and they reward him liberally. The *Mookhee* beats with a shoe or stick a Bunneah convicted of cheating, using false weights, or taking from a customer more than the market price of grain, but he may undersell his neighbours if he pleases. If a case of fraud is brought before the Governor, he levies a fine (*wutr*) of the delinquent and places it at the credit of government. When a respectable Bunneah

is imprisoned for a breach of the law, the *Mookhee* not unfrequently becomes his surety, or furnishes security in a sum of money for his appearing to answer the charges. The *Mookhee* also investigates debts and pecuniary transactions between Bunneahs, and adjudicates between them.

The readiness with which shopkeepers disposed of their goods to our troops at Sukhur and realized payment, the absence of imposts and the security afforded them against oppression, induced numbers to pass from Roree to the west bank of the Indus. Settlers came from all parts of Khyrpoor, Shikarpoor, and Larkhanu. They were principally bunneahs, cloth-merchants and confectioners, and there rose up in a short time, an extensive, bustling, and populous bazar which excited the wonder of the Sindees, who, familiar only with the sight of towns in decay and a decreasing population, flocked from distant parts to visit a market where a few short months before there was nothing but a Golgotha and a wilderness. I counted upwards of one hundred shops in the bazar six months after the arrival of our troops. The readiness with which the people drew to Sukhur was the more remarkable because they entertained considerable doubts if we should occupy Sind permanently, and felt reluctant to incur expense in erecting even temporary sheds to receive their goods. It might have taught Meer Roostum, if he had sense to profit by the lesson, how much could be accomplished in a short period under a just system, towards restoring the prosperity of a town, which enjoyed in time past, a high reputation for wealth and magnificence. There is little doubt if the British continue at Sukhur and the Prince persists in levying the present exorbitant duties and taxes on merchandise in transitu that Sukhur will encrease rapidly in importance and become the great emporium of the commerce of the Indus for which its situation admirably fits it. The merchants and bankers of Shikarpoor, Khyrpoor, and Roree who bury their wealth from the fear of robbers, will find a secure asylum within its walls, and those towns, being deprived of the chief source of their prosperity will share the fate of Thatta and fall away gradually in importance.

There are eight descriptions of officers and servants employed by government in the revenue, police, and customs, and paid once in six months. The officers and dependents of the Prince's household usually receive *jaegeers* and assignments of land in lieu of money.

The public officers and servants are :—

The Kardar or Governor.
Darogha.
Izardar or Revenue Farmer.
Masool or Karao.
Dhurwaee, or Weighman.
Kotwal or Watchman.
Muhta.
Moohurrir.

The Kardar is the Magistrate of Police. Lattu Nimbhun, the present incumbent, is a Chhutree of Thatta and usually resides at the capital, and deputes his brother, Mool Ram, to administer the functions of office in Roree. He has held the situation two years, and has considerable property in land. He is frequently bribed by offenders against the law to remit their punishment, but enjoys on the whole a fair share of popularity. His stipend is 40 rupees a month.

Lattu Deeper, the Izardar, resides in Roree. The Darogha exercises a general surveillance over the Izardar or Revenue Farmer, and checks his accounts, and assists the Kardar to control the Police.

The Masool is invariably a Moosulman and under the Kardar. He receives a seer of flour and two pys per diem, and a *Khurwar* of grain every six months. It is his duty to guard the crops and to see that no one cuts and injures them.

A Dhurwaee is nominated to every town and considerable village in Khyrpoor and Mogherlee, and his duties correspond in some respects with those of the *Dundeedar Dundiya* who collects the market duties in India. He weighs grain, oil, spices, drugs, &c. sold in the town, and receives from the dealer two pys on a *mun* of ghee and oil, and a double hand full of each rupee's worth of wheat, rice, joowaree, bajra, and other grain. No grain can be sold of a mun weight and upwards without his attending to weigh it. He usually helps himself to a great deal more than the quantity he can legally claim. Without waiting to see the grain weighed he thrust his hands into the heap and scoops up a couple of double hands full. This is so much the custom of these officers that shopkeepers almost regard it as their right, and do not utter a remonstrance unless the Dhurwaee is more greedy than usual.

Since the British camp was established at Sukhur, the Bunneahs had such extensive dealings with their brethren of Roree, that to facilitate business, they found it necessary to have a weighman of their own, and appointed a Sindee to the office by consent of the Bunneahs of Roree.

Meer Roostum had no voice in his appointment and his transactions are confined to the town and cantonment. The proximity of a large military force to Roree, infused such bustle and activity into the heretofore quiet town that the Government Dhurwaee did not find his receipts diminished by the interloper. The regulations framed by the Bunneahs of the British cantonment do not oblige them to employ the Weighman, nor do they avail themselves of his services in their transactions with the country-people, but they are valuable in other ways, and they fixed his remuneration at two pys in every *kora* and company's rupee worth of grain, vegetables, and fruit they purchased in the town of Roree.

The Kotwal fulfills the same duty in this country as the chowkeedar or watchman in India. There are five in Roree, who receive each 2 rupees a month, and one is nominated to each of the *chousool* or beats into which the great bazar is divided. The grain market, and other quarters of the town are without public watchmen and the inhabitants protect themselves. The Kotwals remain during the day with the Kardar from whom they receive orders. They collect oil from the shop-keepers of the great bazar to feed a lamp which is burnt at night in each watch house, and they usually get small presents of money and food from the citizens on occasion of a marriage, and are sometimes invited to the nuptial feast.

The Moohurrir or writer is either a Moosulman or Hindoo and one is appointed to each town. His stipend at Roree is 12 rupees a month.

There are several *muhtas* attached to the offices of Kardar and Izardar to keep the accounts of revenue and commerce and record offences against the law. There are also ten soldiers under the Kardar's orders ready to proceed to any quarter of the town which may require their presence. They are an indolent half-armed band much addicted to the use of *bhung* or hemp juice, and each receives a stipend of from 2 to 10 rupees a month.

The mortar of the oil mill used in Roree is the trunk of a tree seven feet in circumference, hollowed to the depth of eighteen inches and terminating in a cylinder. The diameter of the cavity at top is twelve inches, and it is calculated to hold a *naree*, or nine seers of seed. The mill is set in motion by a single camel or bullock which is changed at noon, and the quantity of oil that two camels or bullocks worked alternately, can express in a day, is about twelve seers, the produce of four *narees* of seed. Nine seer of seed yield by pressure about one-third oil, very rarely a fourth. Mustard seed *(surshuf)* sold in the Roree bazar in 18 9 at 4 rupees the *mun*, or 60 rupees the *khurwar* of fifteen *muns*, and the same price in the country. After a bad harvest the price rises to five rupees a *mun*. In the

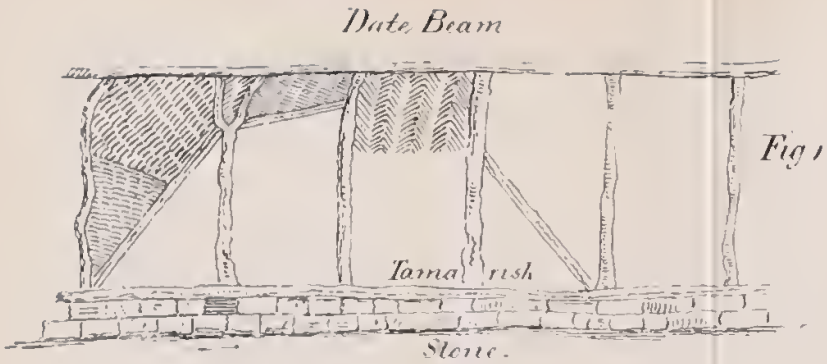


Fig 1

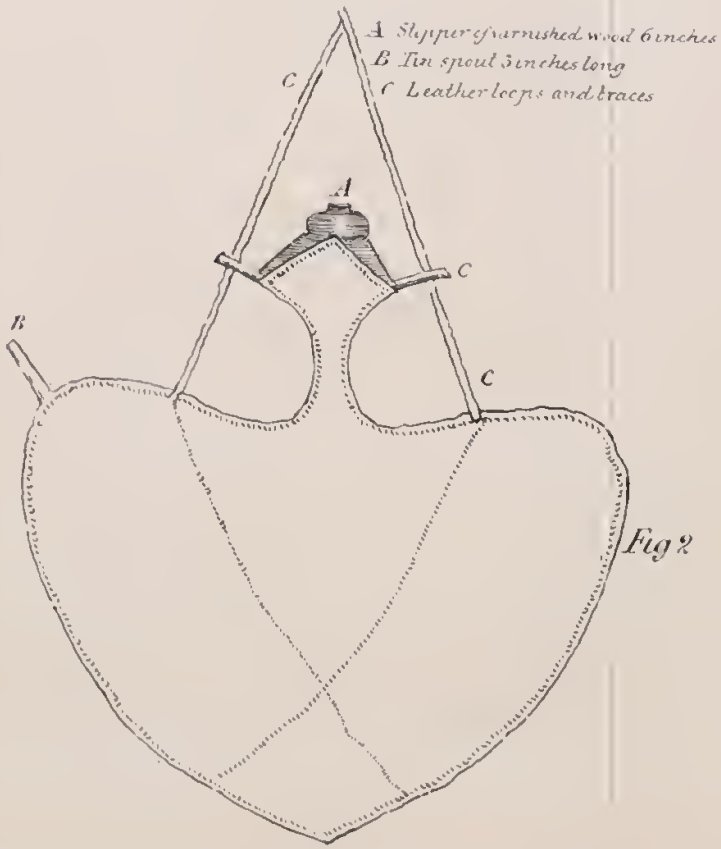
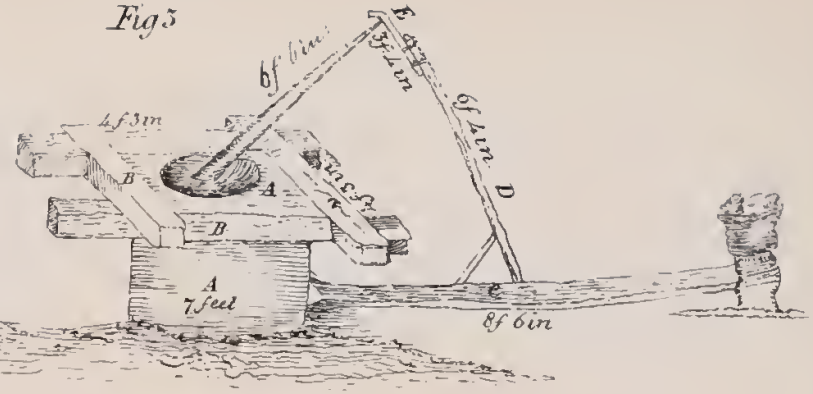
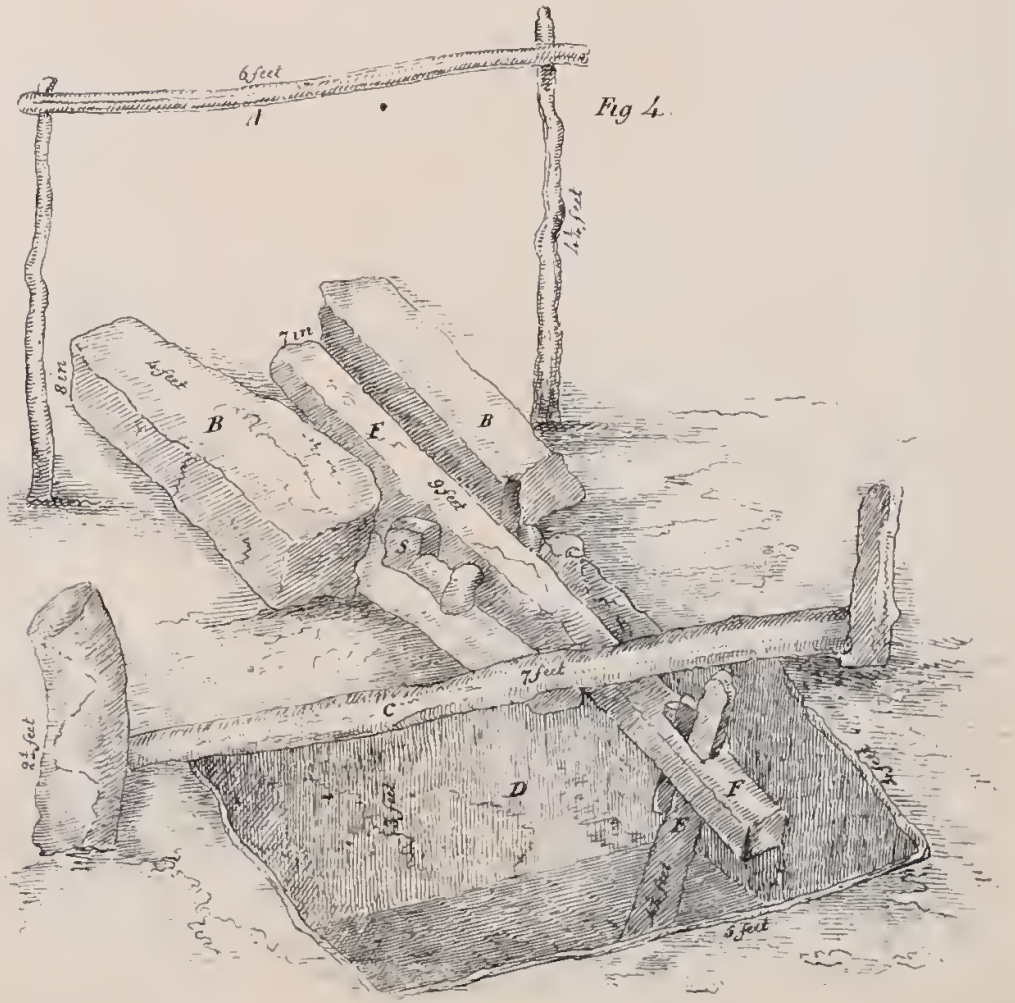


Fig 2





Ballin & Co lith

autumn of 1839, $3\frac{1}{4}$ or $3\frac{1}{2}$ seers of oil sold for one rupee and 30 seers of cake *(khur)* for the same money. Oil cake is given to cattle with chopped grain stalks *(khurbee,)* and is not converted to any other use.

Bullocks employed in a mill wear a cloth over their eyes, and camels small blinkers of basket work to prevent their shying. The pestle which revolves in the mortar has some times a pointed stick attached to it which throws back, of itself, the seeds and cake which fall over the month of the mortar as the pestle passes round. Sometimes a servant sits on the edge of the cavity and performs this office with a *rumba*, a sort of blunt iron chisel weighing about two pounds.

The lever E (see *Fig.* 2) is a piece of timber fastened to the Regulator D. with cords, and pierced by holes furnished with adjusting pins for the purpose of lengthening or shortening it when it is required to increase or diminish the obliquity of the pestle. At the extremity of the horizontal beam C. is a lump of clay modelled in the shape of a basket and bound together with sicks and date ropes. Some heavy stones are piled on the top and form a rude seat for the camel driver, and the camel is yoked to the end of the beam by ropes.

A camel for turning a mill costs 40 or 50 rupees, a bullock 25 or 30 rupees, and a press complete 30 or 40 rupees. The cost of two mills I examined was as follows :—

	Rs.	As.
Mortar of *ghana* wood A.....	20	0
Four square beams that surrounded the mortar B..	4	0
The pestle, lever E, and horizontal beam C. all round..... ..	3	0
Iron *rumba*.....	0	8
Four earthen pots for oil, each holding three seers.....	0	8
The carpenter who shapes the wood gets 5 rupees, and a meal a day for as many days as he is employed. It takes him about ten days to make a press.....	5	0
Cost of carpenter's food, say.....	1	0
Rs.	34	0

Three men are required for a mill. One drives the camel and feeds the mill, and receives 5 rupees a month and food from his master's kitchen. He is expected to extract four *narees* of oil when his labour terminates for the day. The second domestic cleans the camels or bullocks and prepares their food, and receives 3 rupees a month; and the third domestic brings water from the Indus for the use of his master's household and cattle and gets 2 rupees a month. All the servants are expected to assist occasionally in house work.

Oodoo, the proprietor of the mills I am describing, is the principal oil-maker in Roree, and has two mills worked by camels and bullocks, and three servants for each mill. He is a bunneah; and the produce of a *naree* of oil seed is carried away in an earthen receiver as soon as expressed to his shop for sale. He lets out his mill on hire by the day, or to press any quantity of oil, at the following rates, which include the services of domestics and camels.

	Rs.	As
For pressing a *naree* of mustard seed *(surshuf,)**	0	2
Hire of mill per diem for ditto,	0	8
For pressing a *naree* of linseed,† khus grass, and safflowers,	0	2½
Hire of mill per diem for ditto,	0	10
For pressing a *naree* of cocoanuts,	0	3
Hire of mill per diem for ditto,	0	12

The cost of feeding a camel and a bullock in the town of Roree is the same or about 3¾ rupees a month, but a camel is more easily nourished in the jungle about Roree which does not produce grass and herbage for cattle. The oilman assigned another reason for prefering the camel, that he could, when not employed in the mill, make him more generally useful than a bullock, in bringing oil seed, grain, and fodder from the country.

Oil seed is measured with a *pinkee*, a wooden measure of fourteen ‡ *anas* weight, and ten pinkees go to a *naree* of nine seers.

By far the largest quantity of oil comsumed in Khyrpoor is obtained from mustard seed *(surshuf)*. But the following are also subject to pressure, linseed § *(koonjuck)*, khus safflowers *(puwaree)*, and cocoanuts. Twelve seers of the best linseed yield half the quantity of oil.‖ The average return is from four to six seers and never less than a fourth. A small quantity not exceeding one or two seers is extracted at a time for medicinal purposes. The seed sell at 5 Rs. the *mun* of 40 seers, and oil at 32 Rs. the *mun*.

Khus seed sells at 4 Rs. the *mun*, and oil at 13 Rs. the *mun*. Ten seers of seed yield from 2½ to 3¼ seers of oil.

---

* Sinapis dichotoma. Roxb.
† Andropogon muricatum.
‡ The *ana* is a weight equal to 6 shorabee rupees or the sixteenth part of a seer.
§ Linum usitatissimum.
‖ This is about the return in the district of Etayuh, 7½ seers of linseed, castor, and mustard, give about 3 of oil, and the man who works the press is paid in grain.

The return of oil from a *naree* of safflower seeds, if good, is 1 or 1½ seer but sometimes they yield nothing. The price of seed is 1 R. 11 As. per *mun* and oil 20 Rs. per *mun*.

There is no demand in the town for cocoa-nut oil. The nuts are nets to the press across the desert from Jeysulmeer chiefly by the Rajah of that principality and are worth 18 Rs. the *mun*. If good, they yield half their weight of oil; the average return is one-third or a half.

(To be continued.)

Report of the Curator (Henry Piddington Esq.) *of the Society's Museum for May.*

For the month of May, I have to report as follows:—

Geological, Minerological, and Palcontological Departments.—We continue to catalogue and arrange in these departments. I have been able, by the kindness of Mr. Prinsep, to recover three more of Dr. Voysey's note books amongst the papers of Mr. J. Prinsep, making in all 5 books of notes, from which I trust we shall be able to extract much valuable information relative to our collections; and it is only thus, by collecting slowly, putting together piece by piece, and collecting all with the series of specimens, that we shall be able to establish any thing like order, I regret deeply to state that I can obtain no trace of Captain Herbert's catalogue of his Himalaya specimens.

Ornithological and Mammalogical, &c.—Nothing new.

Osteological.—We have been able to acquire here two Samurs and a Neelghye for the trifling sum of 78 Rs.; both are desiderate in our collection. The Neelghye is killed for the purpose of obtaining its skeleton.

Botanical.—I have been fortunate enough to discover a box of Himalaya mosses, sent down from Simla in 1838, by Mrs. Siddons. Upon testing these, I find that, of 18 sorts, at least a dozen give very fine, and some of them brilliant colours (crimsons and crimson browns), so that they are thus of themselves of much promise as dying lichens; and will I hope give

rise to a spirit of enquiry to this hitherto neglected branch of the resources of India; specimens of the lichens and a box of the test liquors are on the table. I have embodied my remarks in a paper for the Journal, of which spare copies are also available, and now on the table. I beg to suggest its early communication to the Agricultural Society, with a set of specimens for their information.

Museum of Economic Geology.—From not being able yet to procure our cases from the native mistry we have not been able to finish our arrangements. We have obtained several valuable additions to this department, which I notice in the donation, amongst which are an excellent series, from the iron ore of Burdwan to the forged metal, by Mr. Wm. Prinsep; American lead ores from Mr. Tregear, with ores and specimens of various kinds from Ajmeer, by Captain Thoresby, and the Nizam's territory from D. Walker (M.A.). A very valuable, though not a showy contribution, is one of a specimen of fire-brick from Futtyghur; presented by Dr. Angus on the part of Dr. Hunter.

We have been able to make a very interesting discovery in this department. In some soils brought from Chedooba by Captain Halstead of H.M.S. 'Childers,' and referred to me for reporting upon, I recognised one resembling the curious Sea-Island Cotton soil of Georgia, which looks like a mixture of sand and charcoal (specimens of both are upon the table.) Upon a careful analysis they prove to be identically the same, and a special report has been made on the subject to Government. It is highly satisfactory, that, almost at its very outset, the Museum of Economic Geology should thus have given the most practical proof possible of its utility, by doing full justice to this valuable discovery of Captain Halstead's; for I need not remark that this soil was hitherto considered unique in the world, and thus was supposed to give the Americans a natural monopoly of the production of Sea-Island Cotton. We now

know that it exist in a country where cotton is a regular crop; and almost at our doors!

The additions to the Museum during the present month have been as follows:

Conchology.—A shell called by the Chinese Shew-cha from Chusan, ...	Captain Rankin, Beng. Vols.
(Pollicesses cornucopia,) ..	
Osteology.—2 Samurs,.....	Purchased.
1 Neelghye, ...	
Miscellaneous.—2 Neptune's Cups, ...	W. Prinsep, Esq.
1 Coil Assam Rope, ...	
A set of the coloured Liquids obtained by the ammoniacal test from 18 specimens of Himalaya Lichens in the Society's collection, ...	Curator.
Museum of Economic Geology.—Soils and minerals from Chedooba, ...	From Goverment
Fire-brick from Futtyghur,.	Dr. Hunter.
Ore, flux, slag and manufactured iron; from the Burdwan Iron-mines,.....	W. Prinsep, Esq.
Lead ores, from the Grossic mine, United States, ...	V. Tregear, Esq.
Copper and other ores and specimens from Ajmere,..	Captain Thoresby, O. R. Agent.
Iron ores and other specimens from Hunumkoondah in the Nizam's territory,..	J. Walker, Esq. M.D.

Museum, 1st June, 1841.

NOTE.—I insert this report in this No. with reference to a further notice on Chedooba soils which will appear in No. 114, and to which the above remarks are inductive.